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OF
CIVIL ENGINEERS



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BOSTON SOCIETY OF CIVIL ENGINEERS

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Editor — WILLIAM L. BUTCHER
715 Tremont Temple, Boston

BOSTON SOCIETY OF CIVIL ENGINEERS
FOUNDED 1848

PROCEEDINGS

PAPERS IN THIS NUMBER.

"Address at the Annual Meeting." Frank A. Barbour.

"The Responsibility of Organized Labor for the Stagnation in the Building Industry." Charles R. Gow.

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Contributors are hereby notified that proof will not be submitted to them for examination unless requested before the 10th of the month preceding the month of publication.

MINUTES OF MEETINGS.

BOSTON, March 16, 1921.—The seventy-third annual meeting of the Boston Society of Civil Engineers was called to order in Rooms A and B of the Boston City Club, on Wednesday, March 16, 1921, at 5.15 o'clock P.M., by the President, Frank A. Barbour, and the records of the last meeting of the Society were read and approved. There were about 125 present at the meeting.

The Secretary reported for the Board of Government that it had elected the following candidates to membership in the grades named:

Members — Messrs. Walter E. Boyd, Bernard D. Connor, Thomas J. Haggerty, Jeremiah J. Horgan and Thomas F. Sullivan.

Juniors — Messrs. Francis C. Flynn, Ralph F. Macaulay, Harold F. MacWilliams, William H. Mueser, Joseph T. Shea and Joseph W. Sloan.

The President announced the result of the letter ballot on the Society's joining the Federated American Engineering Societies, the vote being 322 in favor and 37 against.

The President presented a report made to the Board of Government by a committee representing a number of professional societies in Boston, in relation to the possible establishment of some form of association for bringing together in a manner that might make more easy the coöperation of engineers in this vicinity upon questions and welfare work of interest to them.

By vote the report was referred to the incoming Board of Government of the Society, with full powers.

The annual reports were then taken up.

The President read the annual report of the Board of Government. Later, by vote, it was accepted and the recommendations referred to the incoming board with full powers.

The Treasurer then read his annual report, which was by vote accepted and placed on file.

The Secretary read his annual report, which was accepted and placed on file.

The report of the Committee on the Library was read by the Librarian, and that of the Committee on Social Activities by its chairman, Mr. Berry, both of which were accepted and placed on file.

Mr. Safford, chairman of the Committee on Run-Off Available for Water-Power Purposes, presented a very full report, the result of its four years of careful work, and made a brief statement in regard to the report. By vote the report was accepted and the sincere thanks of the Society were extended to the committee for its valuable work.

The report of the Committee on Licensing Engineers was read by its chairman, Mr. Rogers. By vote the report was accepted and its recommendations referred to the incoming Board of Government for action.

On motion of Mr. Metcalf, the reappointment of the several special committees of the Society was referred to the incoming Board of Government, with full powers.

The Secretary, for the Tellers of election, Messrs. Horace H. Chase and Henry T. Stiff, submitted the result of the letter

ballot for officers of the Society, and in accordance with their report the following officers were declared elected:

President — Robert Spurr Weston.
 Vice-President (for two years) — Edwin H. Rogers.
 Secretary — S. Everett Tinkham.
 Treasurer — Frank O. Whitney.
 Directors (for two years) — Edgar S. Dorr and Richard K. Hale.
 Members of the Nominating Committee (for two years) — Charles R. Berry, Edward S. Larned and Charles R. Main.

In the absence of Mr. Harrison P. Eddy, to whom the Desmond FitzGerald Medal had been awarded, the President asked the chairman of the Committee on the Award of the Medal, Mr. Richard A. Hale, to present the medal at an early date on behalf of the Society.

The President announced the deaths of the following members of the Society: James C. Scorgie, who died February 16, 1921; August F. Bildt, who died February 14, 1921, and David H. Andrews, who died February 24, 1921.

The retiring President, Mr. Frank A. Barbour, then delivered the annual address of the President, which will be printed in the April number of the JOURNAL.

Before leaving the chair the President introduced the President-elect, Mr. Robert Spurr Weston, who expressed his appreciation of the honor conferred on him in the election to this office and outlined briefly some of the work before the Society for the coming year.

At 6.20 o'clock the members adjourned to the main auditorium of the clubhouse, where the annual smoker was held. The usual supply of pipes and tobacco was ready when the doors were opened at half past six, and the refreshments, spread on tables extending the full length of one side of the banquet room, were declared to be the best the City Club had ever provided in the thirteen years it has catered for our smokers.

Music was furnished by Haskell's Orchestra, which also furnished accompaniments for the community singing, under the energetic leadership of Walter Cowlshaw. Entertainment

was furnished by Allen and Clark, comedy musicians; Daley and Thomas, acrobats, and Sam Bailey, sleight-of-hand performer. A pleasing innovation this year was a recitation by a member, Mr. Monaghan, of that baseball classic, "Casey at the Bat." Hardly had the applause subsided when a guest, with profuse apologies for breaking in on the harmony of the gathering, craved permission to be heard for three minutes in which to refute the accusation of lack of prowess by that famous batter. In this plea he was so ably seconded by his host, that the master of ceremonies invited the objector to the platform. The round of applause which greeted the recital of "Casey's Revenge" was faint in comparison with that which arose when those present realized that the whole incident was a frame-up.

The arrangements for the entertainment at the smoker were in the hands of the Committee on Social Activities, and again they scored a most successful evening.

The attendance at the smoker was 210, and the total attendance of members and guests at both functions was over 250.

S. E. TINKHAM, *Secretary*.

BOSTON, March 24, 1921.—A special meeting of the Boston Society of Civil Engineers was held this evening in Lorimer Hall, Tremont Temple, Boston, and was called to order by the President, Robert Spurr Weston, at 8.10 o'clock.

Col. Charles R. Gow, a past president of the Society, was at once introduced and spoke most interestingly for nearly an hour and three quarters, taking for his subject "The Responsibility of Organized Labor for the Present Stagnation in the Building Industry."

At the conclusion of his talk the Society adjourned.

The attendance of members and guests was nearly 300.

S. E. TINKHAM, *Secretary*.

ANNUAL MEETING OF THE SANITARY SECTION.

BOSTON, March 2, 1921.—The Sanitary Section of the Boston Society of Civil Engineers held its annual meeting this evening.

At 6.00 P.M. 21 members of the Section held an informal dinner at the Boston City Club.

At 7.45 P.M. the business meeting was called to order in the Society Rooms, by the Chairman, Edward Wright.

The records of the February meeting were read and approved.

The annual report of the Executive Committee was read and accepted.

Mr. Frank S. Bailey, for the Nominating Committee, submitted the following nominations for the ensuing year:

Chairman — Harold K. Barrows.

Vice-Chairman — Alfred O. Doane.

Clerk — John P. Wentworth.

Executive Committee —

Arthur D. Weston.

Henry V. Macksey.

George W. Bowers.

On motion of Mr. Fales, the Clerk was instructed to cast one ballot for the officers as nominated.

Prof. Dwight Porter reported for the Committee on Methods of Design and Construction and Results of Operation of Inverted Siphons for Carrying Sewage Only and for Storm Water. This report, although not in final form, covered the subject very thoroughly and was very instructive to the members of the Section.

On motion of Mr. Eddy, it was voted that the report be accepted and the committee continued.

Mr. Edgar S. Dorr made a progress report for the Committee on Methods of Design and Construction and Results of Operation of Submerged Pipe Lines for Outfall Sewers.

A written report was received from the Committee on the Proposed Rules and Regulations of the Special Plumbing Board of the State Department of Health. This report was discussed at length by several of the members.

On motion of Mr. Gow, the following resolution was passed:

"Whereas existing plumbing regulations in force throughout the Commonwealth are neither uniform nor economical nor always in accordance with the best sanitary engineering practice,

"Be it resolved by the Sanitary Section of the Boston Society of Civil Engineers that the principles of uniform plumbing regulations throughout the Commonwealth be embodied in the laws of the Commonwealth."

On motion of Mr. Eddy, it was voted "That a committee of three members be appointed by the Chairman to appear at the legislative hearing and present the above resolution and the views of the members as presented at this meeting."

Chairman Wright then presented the incoming Chairman, Prof. Harold K. Barrows.

Adjourned at 9.45 P.M.

JOHN P. WENTWORTH, *Clerk.*

ANNUAL MEETING OF DESIGNERS SECTION.

BOSTON, March 9, 1921.—The annual meeting of the Designers' Section was held this evening in the Society Rooms, and was called to order by the Vice-Chairman, R. E. Rice, at 6.10 P.M. There were 31 members present.

The minutes of the previous meeting were read and approved. The report of the Executive Committee was read and accepted. The report of the Nominating Committee was then read, and, as instructed by vote, the Clerk cast one ballot for the officers nominated, as follows:

Chairman — Ralph E. Rice.
 Vice-Chairman — Edwin S. Parker.
 Clerk — Arthur L. Shaw.
 Executive Committee —
 Martin J. O'Brien.
 Ernest D. Mortenson
 Charles R. Berry

A letter from Chairman Ralph W. Horne, who was detained by illness, was read, in which he expressed his appreciation of the support of the members and officers during his administration.

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The new Chairman, Ralph E. Rice, then assumed his office. He expressed his faith that the Section had made a real place for itself, and urged the coöperation of all to assure continued success. A vote of appreciation of the labors of the outgoing officers was passed.

The speaker of the evening, Prof. E. H. Rockwell, was then introduced, and discussed in an interesting and instructive manner, "Methods of Designing Rigid Concrete Frames."

At the conclusion of the talk a vote of thanks was extended to Professor Rockwell, and the meeting was adjourned at 7.45 P.M.

A. L. SHAW, *Clerk*.

ANNUAL REPORTS.

REPORT OF THE BOARD OF GOVERNMENT FOR THE YEAR 1920-1921.

BOSTON, March 16, 1921.

To the Boston Society of Civil Engineers:

Pursuant to the requirements of the Constitution, the Board of Government presents its report for the year ending March 16, 1921.

Membership.

The total membership of the Society a year ago was 881, of whom 786 were members, 55 juniors, 7 honorary, 29 associate, and 4 were members of the Sanitary Section only.

During the year 24 members have resigned, 20 have forfeited membership for non-payment of dues, 3 juniors have lost membership because of age limit, and 10 have died, making total deductions of 57.

Seventy-six members in all grades have been added during the year, of whom 5 were former members reinstated, and 12 juniors and 1 associate have been transferred to the grade of member.

The present membership of the Society consists of 7 honorary members, 816 members, 43 juniors, 29 associates, and 5 who are members of the Sanitary Section only, making a total membership of 900.

Deaths.

The loss by death during the year has been 10, as follows:

Loammi F. Baldwin, May 10, 1920.

John R. Burke, April 27, 1920.

William M. Brown, May 28, 1920.

Louis B. Vaughan, July 23, 1920.

George S. Rice, December 7, 1920.

Edward A. Freeman, December 13, 1920.

Edmund M. Blake, January 12, 1921.

August F. Bildt, February 14, 1921.

James C. Scorgie, February 16, 1921.

David H. Andrews, February 24, 1921.

Remission of Dues.

Under authority of By-Law 8, the Board of Government has remitted the dues of 7 members.

Regular Meetings.

Nine regular meetings and one adjourned meeting have been held during the year, and a field day at Lake Suntaug, on June 9, in connection with the New England Water Works Association, took the place of the regular meeting that month.

The average attendance at these meetings was 166, the largest being 500 and the smallest 35.

At these meetings papers and addresses have been given, or special discussions held as follows:

March 17, 1920. — Address by the retiring President, Leonard Metcalf, "Constructive Effort *versus* Destructive Criticism and Inactivity in Professional Societies." Addresses on different phases of the Labor Problems by Hon. Frederick P. Fish, Mr. Richard H. Rice, of the General Electric Company, and Mr. Franklin T. Miller, of the F. W. Dodge Company, Boston.

April 21, 1920. — James W. Rollins, Past President, "Thames River Bridge" (illustrated).

May 19, 1920. — Prof. George W. Pierce, of Harvard University, "Submarine Detection and Acoustical Aids to Navigation" (illustrated with lantern slides).

September 15, 1920. — Dana M. Wood, "An Engineer's Impressions of Japan" (illustrated with lantern slides).

October 20, 1920. — "Wood and Concrete Piling," — an informal discussion by Charles R. Gow, James W. Rollins, Frank W. Hodgdon, Henry F. Bryant, J. Wright Taussig, John T. Scully, Frederick A. Waldron and Harry E. Sawtell.

November 17, 1920. — Past-President John R. Freeman, "Some Interesting Problems of China and the Far East" (illustrated with lantern slides).

December 17, 1920. — Joint meeting with the Boston Section of the American Society of Mechanical Engineers and the Boston Section of the American Institute of Electrical Engineers. Prof. Harold K. Barrows, "Water Power Development in New England" (illustrated). Henry I. Harriman, President of the New England Water-Power Company, "St. Lawrence Project."

This was the first of three joint meetings on hydro-electric development — the second being held January 18 under the auspices of the Boston Section of the American Institute of Electrical Engineers, with W. S. Murray speaking on "Electrical Features of the Super-Power Survey"; and the third, held on February 7, under the auspices of the Boston Section of the American Society of Mechanical Engineers, with W. M. White, of the Allis-Chalmers Company, speaking on "Recent Water-Wheel Developments and Settings," and E. B. Powell on the "Design of the Steam-Power Station for Hydraulic Relay."

January 26, 1921. — Roderick B. Young, C.E., senior assistant laboratory engineer, Hydro-Electric Power Commission, Ontario, "New Methods of Proportioning Concrete in Theory and Practice" (illustrated).

February 16, 1921. — William N. Connor, C.E., chief cost accountant, Aberthaw Construction Company, "Construction Costs" (illustrated with lantern slides).

At an adjourned meeting held on December 29, 1920, a discussion was had on the invitation received for the Society to join The Federated American Engineering Societies.

Sanitary Section Meetings.

The Sanitary Section has held six meetings and one excursion during the year. The following papers have been presented at the meetings of this Section:

March 3, 1920. — Col. Frank M. Gunby, "Living Conditions in the Orient."

October 6, 1920. — R. H. Eagles, "Treatment of Sewage and Trade Wastes by Mechanical Methods, with Special Reference to the Dorr Systems" (illustrated by the reflectoscope).

November 3, 1920. — Prof. George C. Whipple, "Recent Experiences in Europe."

November 10, 1920. — T. Chalkley Hatton, "Status of the Activated Sludge Plans at Milwaukee."

January 5, 1921. — Dr. L. L. Williams, "Rat Extermination and Proofing in Relation to the Prevention of Plague"; also discussions of the Report of the Special Plumbing Board of the Massachusetts Department of Health.

February 2, 1921. — Roy A. Lanphear, "Several Years' Experiments in the Treatment of Worcester Sewage."

The average attendance at the Sanitary Section meetings was 43.

On June 2, 1920, an excursion was made by the members of the Section to the Iron-Removal Plant of the Brookline Water Works, Brookline, Mass.

Designers Section.

As mentioned in the last annual report, the experiment of holding meetings by the younger members engaged in designing proved most satisfactory, and in answer to the petition signed by twenty-one members of the Society the Board on April 2, 1920, established the Designers Section.

On April 7 the first meeting was held, and on April 28 a code of by-laws was adopted and officers elected. The by-laws were approved by the Board, May 19, 1920.

Eight meetings have been held since the establishment of the Section, and at seven of these meetings technical subjects have been discussed.

The records of these meetings are as follows:

April 7, 1920. — B. A. Rich discussed "Small Concrete Highway Bridges."

April 28, 1920. — Meeting for election of officers and adoption of by-laws.

May 12, 1920. — Mark Linenthal spoke on "Concrete Ship Construction."

October 6, 1920. — Charles R. Gow and John T. Scully, "Borings; Practical Operation and Interpretation."

November 11, 1920. — J. Francis Travers, Jr., and John H. Hession discussed "Concrete Waterproofing."

December 8, 1920. — George A. Sherron, "Modern Concrete Road Construction: Machinery and Methods" (illustrated by slides and motion pictures).

January 12, 1921. — J. G. Rae discussed "Practical Design from the Contractor's Point of View."

February 9, 1921. — John R. Nichols discussed "Flat Slabs — Design and Building Codes."

The average attendance at these meetings has been 30.

The Designers Section is a proved success, and, with increasing appreciation of its possibilities, it will become a medium through which the Society can be of very definite value to the younger members.

Permanent Fund.

It was again found necessary to use some of the income of the Permanent Fund to meet current expenses, and by vote at the February meeting the entire income of the fund was appropriated and placed at the disposal of the Board for the payment of the expenses of the Society. Under this vote the sum of \$2 371.48 has been appropriated, of which \$1 543.18 has been expended for the current expenses of the past year.

Notwithstanding the appropriation of the entire income of the Permanent Fund, there has been added to the fund during the year the sum of \$830.00. The present value of this fund is \$44 682.51, and, with the E. K. Turner Fund, amounting to \$1 097.12, the permanent funds of the Society amount to the sum of \$45 779.63.

Cost of Journal.

The report of the Editor of the JOURNAL for the calendar year 1920 shows that ten issues of 1 250 copies each have been printed, comprising 625 pages. The net cost of the JOURNAL was \$2 944.95, or \$4.71 per page. In 1919 the net cost was \$2 154.40, or \$3.16 per page.

The very large increase in cost reflects the well-known conditions of 1920, during the early part of which costs of all kinds mounted to extreme levels, printing and paper keeping pace with these advances.

Award of the Desmond FitzGerald Medal.

In accordance with the recommendation of the committee appointed to consider the award of this medal for the best paper by a member of the Society published for the year ending September, 1920, the Board has awarded the medal to Harrison P. Eddy for his paper entitled, "Maximum Rates of Precipitation at Boston for Various Frequencies of Occurrence."

Licensing of Engineers.

A committee to investigate and report on the subject of licensing engineers was appointed May 19, 1920. This committee, realizing the necessity of coöperation, invited other societies to appoint representatives and make it a joint committee. Before final conclusions could be reached, the

American Association of Engineers introduced a bill into the Massachusetts legislature for the registration of engineers and land surveyors.

Believing that more consideration should be given to so important a question, the joint committee made a progress report to the Board of Government, recommending that the proposed legislation be opposed by the Society. While the Society did not adopt this recommendation, individual members, with representatives of other societies, appeared in overwhelming opposition at the hearing before the legislative committee, and the bill was referred to the next session of the General Court.

The Board recommends that the Committee on Licensing Engineers be continued.

The Federated American Engineering Societies.

In response to an invitation to join The Federated American Engineering Societies, a committee was appointed to consider and report on the advisability of such action. This committee recommended such affiliation if financially feasible, and at an adjourned meeting held December 29 called for the discussion of this subject; it was voted to be the sense of the meeting that the Society should join the Federation but that the annual dues should not be increased. At the regular meeting of January 26, similar action was voted and the matter referred to the membership for letter ballot. The result of this ballot, which has just been announced, is a vote of 322 in favor of and 37 against the Society becoming a member of the Federation.

Conservation of National Parks.

Following the constitutional provisions governing endorsements, the Society voted at the meeting of December 17, and subsequently by letter ballot (297 yeas, 10 nays), to endorse the proposed legislation amending the Federal Water-Power Act so as to make impossible entrance into National Parks for irrigation and water-power development and to oppose the so-called Smith Bill, granting rights in the National Parks.

Lease of Headquarters.

A new lease has been made of the Society rooms for the term of three years from October 1, 1920, and new leases have been made with our sub-tenants. Under the new lease the Society pays a gross yearly rental of \$4 300, and after deducting the rentals paid by our tenants there is a net yearly increase in the Society's rent of \$845, or 52%.

Coöperation with Other Societies.

At a meeting of the local members of the American Society of Civil Engineers on March 5, 1921, a committee was selected to consider the probable affiliation of a local section of the American Society, when formed, with this Society.

The committee on coöperation between Engineering Societies — referred to in the last annual report of the Board — has recommended the creation of a joint standing committee on coöperation, made up of representatives from all professional societies. It is believed that this is a step in the right direction and that the report should be referred to the incoming Board of Government with full powers.

Social Activities.

The luncheons served in the rooms of the Society before meetings have proved a success in the closer personal contact and sociability which results when men break bread together.

That these lunches have been provided is due to the capable planning and unselfish work of the Committee on Social Activities.

For the Board of Government,

F. A. BARBOUR, *President.*

REPORT OF THE TREASURER.

BOSTON, March 1, 1921.

To the Boston Society of Civil Engineers:

Your Treasurer presents the following report for the year ending March 1, 1921.

Detailed data are contained in the appended tabular statements; Table 1 gives the receipts and expenditures for the year; Table 2, comparative balance sheets; Table 3, investment of the Permanent Fund.

The current expenses for the year amount to \$10 934.44, being \$1 122.29 increase over the preceding year.

There has been transferred to the Current Fund, from income for current expenses carried over from last year, \$927.45, also all the income of the Permanent Fund for the current year, amounting to \$2 371.48, a total of \$3 298.93, of which \$828.30 remains unexpended.

The net expense of the JOURNAL has been \$658.38 more than last year. The income from advertisements decreased \$130.44, otherwise the JOURNAL expenses would show an increase of \$527.94.

There has been an increase in the Permanent Fund of \$830.00 after transferring the income for the current year of \$2 371.48 to the Current Fund.

Ten coöperative bank shares have been withdrawn, valued at \$1 742.30.

Respectfully submitted,

F. O. WHITNEY, *Treasurer.*

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TABLE I.—RECEIPTS AND EXPENDITURES.
CURRENT FUND.

<i>Receipts.</i>	
Members' dues.....	\$6 988.61
Advertisements.....	1 150.50
Sale of JOURNALS.....	278.22
Library fines.....	11.99
Old paper sold.....	7.04
June outing.....	18.87
Interest on bank deposits.....	8.58
Income fund for current expenses.....	927.45
Income from Permanent Fund.....	2 371.48
	\$11 762.74
<i>Expenditures.</i>	
JOURNAL.....	\$4 472.22
Printing, stationery, postage, etc.....	639.23
Rent (net).....	2 205.40
Light.....	70.73
Salaries (except Editor).....	2 421.00
Reporting.....	47.50
Stereopticon.....	27.50
Binding.....	149.25
Periodicals.....	79.45
Incidentals and repairs.....	278.94
Insurance.....	35.39
Annual meeting and dinner.....	292.45
Social activities.....	83.07
Sanitary Section, incidentals.....	\$8.66
Reporting.....	18.00
Printing.....	54.15
Stereopticon.....	12.00
	92.81
Designers Section, incidentals.....	\$2.00
Printing.....	28.50
Stereopticon.....	9.00
	39.50
Balance.....	828.30
	\$11 762.74

PERMANENT FUND.

<i>Receipts.</i>	
Entrance fees.....	\$700.00
Contributions.....	130.00
Interest received (net).....	1 871.48
Coöperative bank shares withdrawn.....	1 742.30
	\$4 443.78

BOSTON SOCIETY OF CIVIL ENGINEERS.

Expenditures.

Coöperative bank dues.....	\$900.00
Investments paid for.....	1 128.49
Transferred to Current Funds.....	2 371.48
Balance.....	43.81
	\$4 443.78

E. K. TURNER LIBRARY FUND.

Cash on hand, March 1, 1920.....	\$64.97
Interest on bond.....	50.00
	\$114.97
Books purchased.....	\$11.60
Cash.....	103.37
	\$114.97

INCOME FOR CURRENT EXPENSES.

Cash on hand, March 1, 1920.....	\$927.45
Transferred to Current Fund.....	\$927.45

TABLE 2.—COMPARATIVE BALANCE SHEETS.

Assets.	March 1, 1918.	March 1, 1919.	March 1, 1920.	March 1, 1921.
Cash.....	\$487.95	\$487.12	\$339.49	\$975.48
Bonds and notes.....	34 835.00	35 023.00	35 523.00	35 523.00
Stock.....	1 950.00	1 950.00	1 950.00	1 950.00
Coöperative banks.....	5 930.85	7 179.65	8 501.75	8 159.45
Library.....	7 500.00	7 500.00	7 500.00	7 500.00
Furniture.....	2 405.11	2 405.11	2 405.11	2 405.11
	\$53 099.91	\$54 544.88	\$56 213.35	\$56 513.04
Liabilities.				
Permanent Fund.....	\$41 687.92	\$43 467.51	\$43 852.51	\$44 682.51
E. K. Turner Fund.....	1 023.12	1 063.22	1 058.72	1 097.12
Unexpended appropriations..	105.92		927.45	
Current funds.....	377.84	109.04		828.30
Unpaid bills.....			469.56	
Surplus.....	9 905.11	9 905.11	9 905.11	9 905.11
	\$53 099.91	\$54 544.88	\$56 213.35	\$56 513.04

TABLE 3. — INVESTMENT OF PERMANENT FUND, MARCH 1, 1921.

Bonds.	Par Value.	Actual Cost.	Value as Carried on Books.
American Tel. & Tel. Co. Col. Tr. 4%, 1929.	\$3 000.00	\$2 328.75	\$2 737.50
Union Elec. Light & Power Co. 5%, 1932...	2 000.00	2 050.00	2 050.00
Blackstone Valley Gas & Elec. Co. 5%, 1939	2 000.00	1 995.00	1 995.00
Dayton Gas Co. 5%, 1930.....	2 000.00	2 000.00	2 000.00
Milford & Uxbridge St. Ry. 7%, 1923.....	3 000.00	2 942.50	2 942.50
Railway & Light Securities Co. 5%, 1939..	3 000.00	3 000.00	3 000.00
Superior Light & Power Co. 4%, 1931.....	4 000.00	3 547.50	3 347.50
Wheeling Electric Co. 5%, 1941.....	4 000.00	3 845.00	3 845.00
Economy Light & Power Co. 5%, 1956....	1 000.00	990.00	990.00
Tampa Electric Co. 5%, 1933.....	2 000.00	2 000.00	2 000.00
Galveston Houston Elec. Ry. Co. 5%, 1954	2 000.00	1 940.00	1 940.00
Northern Texas Elec. Co. 5%, 1940.....	2 000.00	1 932.50	1 932.50
Chicago & Northwestern Ry. 5%, 1937....	1 000.00	1 102.50	1 102.50
Vermont Power & Mfg. Co. 5%, 1928.....	1 000.00	965.00	965.00
American Tel. & Tel. Co. 5%, 1946.....	1 000.00	993.75	993.75
United States Liberty Loan 3½%, 1947....	2,000.00	2,000.00	2,000.00
American Tel. & Tel. Co. 6%, 1925.....	200.00	188.00	188.00
United States Victory Loan 4¾%, 1923...	500.00	500.00	500.00
	\$35 700.00	\$34 120.50	\$34 529.25
 Stock.			
15 shares Am. Tel. & Tel. Co.....	1 500.00	1 950.00	1 950.00
Total Securities.....	\$37 200.00	\$36 070.50	\$36 479.25
 Coöperative Banks.			
25 shares Merchants Coöperative Bank, including interest to March.....		\$3 194.25	
15 shares Volunteer Coöperative Bank, including interest to January.....		1 745.10	
25 shares Watertown Coöperative Bank, including interest to March.....		3 220.10	
			8 159.45
Total value of invested funds.....			\$44 638.70
Cash.....			43.81
Total value of Permanent Funds.....			\$44 682.51

BOSTON SOCIETY OF CIVIL ENGINEERS.

E. K. Turner Fund.

	Par Value.	Actual Cost.	
Am. Tel. & Tel. Co. 5%, 1946 .	\$1 000.00	\$993.75	\$993.75
Cash on hand.....		103.37	103.37
			<u>1 097.12</u>
			\$45 779.63

We have examined the above report and found it correct.

STURGIS H. THORNDIKE,
HENRY B. WOOD,
*Auditing Committee of Directors of
the Boston Society of Civil Engineers.*

REPORT OF THE SECRETARY.

BOSTON, March 16, 1921.

S. EVERETT TINKHAM, Secretary, *in account with the BOSTON SOCIETY OF CIVIL ENGINEERS, Dr.*

For cash received during the year ending March 16, 1921:

From entrance fees, new members and transfer:

57 new members and associates.....at \$10,	\$570.00
14 juniorsat 5,	70.00
12 juniors transferred to membersat 5,	<u>60.00</u>

Total from entrance fees..... \$700.00

From annual dues for 1920-21, including dues from new members..... \$6 855.61

From back dues..... 53.00

From dues for 1921-22..... 80.00

Total from dues..... 6 988.61

From rents..... 1 487.50

From advertisements..... 1 150.50

From sale of JOURNALS and reprints..... 278.22

From library fines..... 11.99

From sale of old paper..... 7.04

From Committee on Social Activities on account June outing 18.87

From contribution to building fund..... 100.00

From portion of donation to 25th Engineers, made February, 1918,
and returned May, 1920..... 30.00

Total..... \$10 772.73

The above amount has been paid to the Treasurer, whose receipts the Secretary holds.

We have examined the above report and found it correct.

STURGIS H. THORNDIKE,
HENRY B. WOOD,
*Auditing Committee of Directors of
Boston Society of Civil Engineers.*

REPORT OF THE LIBRARY COMMITTEE, 1920-21.

BOSTON, MASS., March 16, 1921.

To the Boston Society of Civil Engineers:

The Librarian submits for the Library Committee the following report for the year 1920-21.

Since the last report, 285 volumes bound in cloth and 279 bound in paper have been added to the library, making a total of 564 accessions.

There are now about 9 900 cloth-bound volumes in the library, and those bound in paper number about 3 279.

During the year 308 books have been loaned to members, and fines to the amount of \$11.99 have been collected.

Rather more binding has been done this year than last, owing to the fact that the last half of the 1919 periodicals were added to this year on account of the illness and death of the assistant librarian.

The Society has received from the estate of Mr. F. L. Fuller the engineering books in his library, and while many of them were already on the shelves quite a number could be added to the library.

Thirteen books on engineering subjects have been added to Section 10, — two of them being purchased, four contributed by the authors and publishers, as follows: "Engineering for Land Drainage," by C. G. Elliott; "Railroad Curves and Earthworks," by C. Frank Allen; "Short-Span Bridges," by J. W. and E. D. Storrs; and "Power Development of Small Streams," by Harris and Rice. The other seven have been given by various members of the Society.

Clemens Herschel has contributed some thirty-seven volumes to the Herschel Library, as well as supplying "Annales des Ponts et Chaussees," volumes 1901-1919 inclusive, and "Zeitschrift für Bauwesen," volumes 1915-1919 inclusive, for binding.

The Catalogue Equipment and Supply Company have continued keeping up to date the collection of trade catalogues placed in our library, and pocket indexes to these catalogues will be furnished to members on request.

Respectfully submitted,

S. EVERETT TINKHAM, *Librarian.*

REPORT OF EXECUTIVE COMMITTEE OF THE SANITARY SECTION.

BOSTON, MASS., March 2, 1921.

To the Sanitary Section, Boston Society of Civil Engineers:

Your Executive Committee presents the following report for the year 1920-21.

Six meetings have been held, the subjects and speakers being as follows:

March 3, 1920. — Annual meeting. "Living Conditions in the Orient." Col. Frank M. Gunby.

October 6, 1920. — "The Treatment of Sewage and Trade Wastes by Mechanical Methods, with Special Reference to the Dorr Systems." R. H. Eagles.

November 3, 1920. — "Recent Experiences in Europe." George C. Whipple.

November 10, 1920. — "The Status of the Activated Sludge Plans for Milwaukee." T. Chalkley Hatton.

January 5, 1921. — "Rat Extermination and Proofing in Its Relation to the Prevention of Plague." Dr. L. L. Williams.

Discussion of the Report of the Special Plumbing Board of the Massachusetts Department of Health.

February 2, 1921. — "Several Years' Experiments in the Treatment of Worcester Sewage." Roy S. Lanphear.

The average attendance at these meetings was 43.

On June 2, 1920, an excursion was made to the Iron-Removal Plant of the Brookline Water Works.

Membership. — Four new members have been added during the year, making a present total membership of 171.

Special Committees. — There are now three special committees in the Sanitary Section:

A committee on Methods of Design and Construction and Results of Operation of Submerged Pipe Lines for Outfall Sewers.

A committee on Methods of Design and Construction and Results of Operation of Inverted Siphons for Carrying Sewage Only and for Storm Water.

A committee on Proposed Rules and Regulations of the Special Plumbing Board.

It is recommended that these committees be continued for the coming year.

Respectfully submitted,

For the Executive Committee,

JOHN P. WENTWORTH, *Clerk.*

REPORT OF EXECUTIVE COMMITTEE OF THE DESIGNERS SECTION.

BOSTON, March 3, 1921.

To the Designers Section of the Boston Society of Civil Engineers:

The Designers Section has held eight meetings since its formal organization in the spring of 1920. At seven of these meetings technical subjects occupied the sessions. The second meeting was devoted to election of officers and adoption of a set of by-laws for submission to the Board of Government.

The speakers and subjects of the meetings are as follows:

April 7, 1920. — Mr. B. A. Rich, "Small Concrete Highway Bridges."

April 28, 1920. — Election of officers and adoption of by-laws.

May 12, 1920. — Mr. Mark Linenthal, "Concrete Ship Construction."

October 6, 1920. — Mr. Charles R. Gow and Mr. John T. Scully, "Borings."

November 11, 1920. — Mr. John H. Hession and Mr. J. Francis Travers, Jr., "Waterproofing."

December 8, 1920. — Mr. George A. Sherron, "Modern Concrete Road Construction: Machinery and Methods."

January 12, 1921. — Mr. J. G. Rae, "Practical Design from the Contractor's Point of View."

February 8, 1921. — Mr. John R. Nichols, "Flat Slabs; Design and Building Codes."

The attendance has steadily increased. There were 23 at the first meeting, April 7, 1920, and 40 at the last meeting on February 8, 1921. The average attendance was 30. The mailing list has contained but 50 names, and no concerted attempt has been made to swell the membership in the Section. It has been felt that the Section should justify its existence first upon a modest basis before undertaking to augment its enrollment by other than the voluntary applicants whom the Section's activities may have attracted. The experience of the past season has, your Executive Committee believes, demonstrated that the Designers Section fills a need among the younger members of the Society, and it is therefore recommended that the incoming officials consider the popularization of the Section, making an effort to acquaint the members of the Society with its activities, so that a greater number may receive its benefits.

It is further recommended that it be made the custom of the Section to formally close all sessions promptly at 7.45 P.M., so that advantage of the 6.00 P.M. opening hour may not be lost for those who desire it. This can probably be done without preventing the continuation of the discussions informally by all who wish.

A revival of the plan — adopted in an earlier meeting, but fallen into disuse — to have each member when he rises to speak during a discussion give his name and that of the firm by whom he is employed, is recommended.

Respectfully submitted,

For the Executive Committee, by

A. L. SHAW, *Clerk.*

REPORT OF COMMITTEE ON SOCIAL ACTIVITIES.

BOSTON, MASS., March 16, 1921.

To the Boston Society of Civil Engineers:

The Committee on Social Activities submits this annual report for the year 1920-21.

At the annual smoker held on March 17, 1920, this committee was requested to provide the entertainment for the evening. The committee secured the services of an orchestra, which furnished selections during the evening; Jack Liden, who came with a good supply of stories and anecdotes; the Apollo Male Quartet, who furnished vocal selections very acceptably, and moving pictures of educational subjects. On account of the meeting coming on March 17, the committee provided green decorated crêpe paper hats, which were worn by every one present. Judging from the interest and enthusiasm shown, we are led to believe that every one present enjoyed himself.

Shortly after the annual meeting, the committee, in conjunction with a committee from the New England Water Works Association, began looking for a suitable place for the outing. Many amusement parks and resorts were discussed, and Wardhurst on Lake Suntaug in Lynnfield was selected as the most desirable. On June 9 the two societies visited Wardhurst for the annual outing and field day. The day was beautiful, the proprietor very cordial, everybody happy, and all the 109 present agreed on its success. Track events for gentlemen and ladies were run off in the morning, and after a most enjoyable dinner a red-hot baseball game was played between the Boston Society of Civil Engineers and the New England Water Works Association, the Boston Society team being the victors.

Previous to each of the regular monthly meetings, with one exception, the social hour has been held, beginning at 6.15 P.M. and filling in the time when some of the members would ordinarily go home and be too comfortable to come back to the meeting. At each of these occasions light refreshments were served, and men touched elbows with each other and became better acquainted. The exception was in December, when a large joint meeting was held and we had no data whatever as to how many to provide for.

The membership of the Society has increased, men know each other better, and the committee feels that this social hour has been a success.

The committee has been asked to take charge of the "smoker" and entertainment, in connection with the President and Secretary.

The chairman wishes to acknowledge the hearty coöperation and help of the committee, without whose assistance these activities could not have been a success.

Respectfully submitted,

CHARLES R. BERRY,

Chairman of Committee on Social Activities.

REPORT OF COMMITTEE ON LICENSING ENGINEERS.

BOSTON, MASS., March 12, 1921.

TO THE BOARD OF GOVERNMENT, BOSTON SOCIETY OF CIVIL ENGINEERS:

Gentlemen,—The undersigned committee of members of the Boston Society of Civil Engineers, appointed by your Board to consider the matter of licensing of engineers, begs to submit the following report.

The committee refers to the majority report of the joint committee on licensing of engineers, composed of this committee and representatives of other engineering and architectural societies, submitted to your Board under date of January 8, 1921, as signed by twelve of the thirteen members of that committee, and states that the American Association of Engineers did not withdraw its petition to the legislature with its accompanying bill for the registration of professional engineers and land surveyors, as recommended in the aforesaid report that it be requested to do.

The members of the majority of the joint committee then voted to oppose the bill as individuals and to be represented by counsel.

A hearing on the bill was held by the legislative committee on mercantile affairs on February 18, 1921. The bill was favored by counsel for the American Association of Engineers, and the speakers in favor of the bill were only those introduced by him and who are understood to be members of that society.

Both the form of the bill and the principle of registration were opposed or questioned in person, by counsel or by letter, by members of the seven other societies represented on the joint committee, as well as by members of the American Chemical Society, the Engineering Society of Western Massachusetts and individual engineers. A count of those present, by the legislative committee, showed 19 in favor, against 89 opposed.

The legislative committee recommended the bill be referred to the next annual session of the legislature, and this recommendation was adopted in the Senate on February 24, 1921, and by the House on March 3.

The undersigned committee recommends that it or a similar committee be continued during the coming year to further study the matter of licensing engineers, and that your Board at its discretion invite other engineering or architectural societies to add their representatives to its membership and so continue a joint committee on the licensing of architects and engineers,

Respectfully submitted,

(Signed) CHARLES W. SHERMAN.

CHARLES R. GOW.

CHARLES T. MAIN.

CHARLES M. SPOFFORD.

IRVING E. MOULTROP.

EDWIN H. ROGERS, *Chairman*.

REPORT OF THE EDITOR.

TO THE BOARD OF GOVERNMENT, BOSTON SOCIETY OF CIVIL ENGINEERS:

Gentlemen, — The Editor submits the following report for the calendar year 1920.

There have been published 13 papers and 10 memoirs of deceased members.

The 10 issues of the JOURNAL, of 1 250 copies each, contained a total of 625 pages.

The net cost was \$2 944.95, or \$4.71 per page. In 1919 the net cost was \$2 154.40, or \$3.16 per page. The very large increase in cost reflects the well-known conditions of 1920, during the early part of which costs of all kinds mounted to extreme levels. Printing and paper kept pace with these advances.

There are indications, in addition to those given by the general situation, that before the middle of 1921 the cost of the JOURNAL will have commenced to decline from the present high level.

In the appended table are shown in tabular form figures of cost, number of pages, and other details.

Respectfully submitted,

W. L. BUTCHER, *Editor*.

1920 JOURNAL.

Month.	PAGES OF			No. OF		COST OF								
	Papers.	Proc.	Index.	Adv. (inc. Index and Other Unpaid Space).	In- serts.	Cuts.	Papers, Proc. and Index (inc. Stock for Adv. Pages).	Inserts and Cuts.†	Adv.	Reprints.	Postage, Wrapping and Mailing.	Editing.	Incl- dentials.	Copy- right.
Jan.	46	4		19 ⁸		1	\$263.69	\$4.84	\$24.25		\$22.12			
Feb.	36	8		19 ⁵	1	5	303.47	66.44	36.82	\$35.00	27.83		\$5.00	
Mar.	16	14		19 ¹²		3	184.78	11.58	40.50	15.00	25.83			
Apr.	58	24		19 ¹²		7	446.31	17.49	43.63	60.00	22.55			
May	20	16		19 ¹²		3	222.86	21.64	27.25	15.50	24.95			
June	26	14		19 ¹²		17	234.89	77.55	31.88	25.00	26.55		5.06	
Sept.	28	8		18 ¹		1	244.13	45.02	21.00	33.40	25.16		.14	
Oct.	14	10		18 ¹		5	193.06		39.50		22.79		72.86	
Nov.	28	8		18 ¹		5	261.82		51.45	47.00			5.00	
Dec.	27	12	8	18 ¹		1	341.79	4.44	31.50		27.97		4.40	
Totals	299	118	8	189 ^{1*}	2	43	\$2 696.80	\$249.00	\$347.78	\$230.90	\$255.23	\$450.00	\$92.46†	\$10.00

\$4 332.17

Gross cost,.....

Receipts, sale of JOURNALS and

subscriptions,.....

Advertisements,.....

Reprints,.....

Cost of cuts, paid by author,.....

I 387.22

Net cost,.....

\$2 944.95

* 200 pages used, not all set solid.

† Some cuts supplied by authors.

‡ Includes \$72.50 for wrappers for mailing purposes and

\$15 second-class postage.

APPLICATIONS FOR MEMBERSHIP.

[April 15, 1921.]

THE By-Laws provide that the Board of Government shall consider applications for membership with reference to the eligibility of each candidate for admission and shall determine the proper grade of membership to which he is entitled.

The Board must depend largely upon the members of the Society for the information which will enable it to arrive at a just conclusion. Every member is therefore urged to communicate promptly any facts in relation to the personal character or professional reputation and experience of the candidates which will assist the Board in its consideration. Communications relating to applicants are considered by the Board as strictly confidential.

The fact that applicants give the names of certain members as reference does not necessarily mean that such members endorse the candidate.

The Board of Government will not consider applications until the expiration of twenty (20) days from the date given.

ABBOTT, HENRY KINGMAN, Reading, Mass. (Age 28, b. Reading, Mass.) High school education. In 1913 entered the employ of C. E. Carter as rodman, working up to chief of party; joined the army in 1918; from Mar. to Aug., 1919, was chief of party for Weston & Sampson at U. S. Housing Corps' project; from Sept., 1919, to June, 1920, with F. E. Sherry, C.E.; from June to Sept., 1920, inspector on sewer work at Reading, Mass.; and from Sept., 1920, to present time, with Dana F. Perkins, Reading, Mass. Refers to F. A. Barbour, C. E. Carter, H. F. Davis, F. W. Haley and G. A. Sampson.

BROSNAHAN, JOHN E., Boston, Mass. (Age 28, b. Boston, Mass.) Educated in Boston public schools, and engineering courses in various night schools, also three years' private instruction in engineering. From Feb., 1912, to the present time, rodman and instrumentman with the Sewer Service, City of Boston. Refers to T. F. Bowes, F. W. Dakin, E. S. Dorris, C. S. Drake, J. E. L. Monaghan and E. F. Murphy.

CURRIER, GEORGE WASHINGTON, Brighton, Mass. (Age 61, b. Lawrence, Mass.) Educated in the Lawrence High School, two and a half years at Amherst College, and four years at Harvard Medical School. In 1900 employed as draftsman in the Sewer Service, City of Boston; 1901-14, reporter, editor and artist on Boston newspapers; 1914-17, senior draftsman in Sewer Division, City of Boston; transferred in 1917 to the Bridge and Ferry Division of City of Boston, where he is now employed as a designing draftsman. Refers

to J. E. Carty, E. S. Dorr, C. S. Drake, J. E. L. Monaghan, L. B. Reilly and S. E. Tinkham.

DAVIDSON, WILLIAM F., Clinton, Mass. (Age 33, b. Clinton, Mass.) From 1905-1916 in the employ of Parker, Bateman & Chase, civil engineers; from April, 1916, to May, 1918, superintendent of streets, town of Lancaster; from May, 1918, to July, 1919, with Engineers, U. S. Army; from July, 1919, to April, 1920, again superintendent of streets of Lancaster; from April, 1920, to date, engineer and superintendent of streets and sewers of town of Clinton. Refers to E. R. B. Allardice, F. W. Bateman, L. H. Bateman and G. H. Chase.

DUFOUR, FRANK OLIVER, Newtonville, Mass. (Age 48, b. Washington, D. C.) Is an associate member of the American Society of Civil Engineers. At present structural engineer with Stone & Webster, Inc. Refers to F. A. Barbour, F. M. Gunby, C. T. Main, H. E. Sawtell and S. E. Tinkham.

GIANNI, PLACIDO, Boston, Mass. (Age 22, b. Palermo, Italy.) Student in carpentry and building at Boston Trade School, 1914-16, and at Wentworth Institute, in architecture and civil engineering, 1916-19. From July, 1919, to March, 1920, drafting and designing concrete buildings with Kearns Construction Co.; March to Sept., 1920, drafting and designing concrete buildings with Nordyke C. Marmon Co., Indianapolis, Ind., and from Sept., 1920, to date, draftsman with the Swett & Sibley Co., ornamental iron and wire workers, Cambridge. Refers to A. G. Martin, E. P. Rankin, H. C. Thomas and E. A. Varney.

O'CONNELL, TIMOTHY J., Boston, Mass. (Age 40, b. Somerville, Mass.) Educated in Dorchester High School and English High School (evenings). From 1900 to 1905, superintendent, D. F. O'Connell Co.; from 1905 to 1912, member of firm of T. J. O'Connell; and from 1912 to date, member of firm and manager, William Barrett & Co. Refers to E. S. Dorr, C. S. Drake, F. A. Garvin, J. E. L. Monaghan and E. F. Murphy.

RYAN, EDWARD JAMES, Boston, Mass. (Age 57, b. Boston, Mass.) Educated in Boston public schools. From 1906 to 1912, rodman in Sewer Service of City of Boston; from 1912 to 1917, transitman in same service, in charge of party on sewer surveys and construction; from 1917 to 1920, supervisor catch-basin cleaning contracts; and from 1920 to date, engineering representative in charge of inspecting and distribution of iron castings for Sewer Service. Refers to T. F. Bowes, J. E. Carty, E. S. Dorr, C. S. Drake, E. F. Murphy and J. E. L. Monaghan.

SULLIVAN, DANIEL MAYNARD, Boston, Mass. (Age 33, b. Newport, R. I.) Graduate of Tufts College, 1911, with degree of B.S. in engineering. Summers of 1910 and 1911, topographical aid, U. S. Geological Survey, and from 1911 to date, employed in Public Works Department, Boston, as follows: 1911-12 as rodman; 1912-16 as instrumentman; 1916-18 as junior engineer, and 1918-21 as assistant engineer in charge of construction of high-pressure fire service. Refers to C. J. Carven, E. S. Dorr, C. S. Drake, F. A. McInnes, J. E. L. Monaghan and E. F. Murphy.

VAUGHAN, JOHN FAIRFIELD, Cambridge, Mass. (Age 49, b. Cambridge, Mass.). Graduate of Harvard University, with degree of S.B., in 1895. From 1895 to 1896, with General Electric Co., in construction work of electrification of N. Y., N. H. & H. R. R.; from 1896 to 1902, engineer for electrical department of N. Y., N. Y. & H. R. R., in charge of design, construction and operation of electrification; from 1902 to 1916, with Stone & Webster, Inc., as engineer, head of railway and hydraulic department, and consultant from 1916 to 1917; private practice to date, office continuing through absence in war work in charge of assistant; from 1917 to 1919, supervisor, U. S. S. B., Emergency Fleet Corp., Division Wood Ship Construction, and district manager, same corporation, and in 1919 returned to own office. Refers to C. T. Main, S. H. Thorndike, D. M. Wood and J. R. Worcester.

LIST OF MEMBERS.

ADDITIONS.

ALLEN, HERBERT B.	154 Harrison Ave., Fitchburg, Mass.
BOYD, WALTER E.	67 River St., Hudson, Mass.
BURRAGE, HENRY T.	15 Ellery St., Cambridge 38, Mass.
CONNOR, JOHN E.	703 City Hall Annex, Boston 9, Mass.
COVE, EARLE H.	80 Sprague St., Readville, Mass.
CRONIN, WILLIAM H.	361 Washington St., Cambridge, Mass.
GARVIN, FRANK A.	67 Fairbanks St., Brighton 35, Mass.
HAGGERTY, THOMAS J.	111 Union Park St., Boston 18, Mass.
HORGAN, J. J.	931 River St., Fitchburg, Mass.
LELAND, FRANKLIN E.	25 Groveland St., Auburndale, Mass.
MACLEAY, FRANCIS R.	Goddard Seminary, Barre, Vt.
NORRIS, CLARENCE G.	217 Fairmount Ave., Hyde Park 36, Mass.
SHAW, PERCY A.	11 W. Appleton St., Manchester, N. H.
SULLIVAN, THOMAS F.	1736 Columbia Road, So. Boston, Mass.
WATSON, GEORGE N.	137 Edenfield Ave., Watertown, Mass.

CHANGES OF ADDRESS.

ALLEN, CHESTER S.	60 Federal St., Boston, Mass.
ALBEE, E. E.	46 Harbor View Ave., Winthrop 52, Mass.
BABBITT, JOHN H.	Room 38, Y. M. C. A., New Castle, Pa.
BROWN, ALBERT F.	36 Maxwell St., Boston 24, Mass.
CARSON, HOWARD A.	Mango Ave. Hotel, Sarasota, Fla.
CLARKSON, EDWARD H., Jr.	41 Tyng St., Newburyport, Mass.
EWING, W. C.	American City Bureau, Tribune Bldg., New York, N. Y.
GOULD, GARDNER S.	33 Rhodes Ave., Edgewood, R. I.
HALE, RICHARD K.	559 Chestnut Hill Ave., Brookline, Mass.
HOLMES, H. E.	5 Arlington Terrace, Malden, Mass.
HOLWAY, WILLIAM R.	1616 So. Forest St., Tulsa, Okla.
LINENTHAL, MARK	Room 810, 43 Tremont St., Boston 9, Mass.

LEWIS, GEORGE W.....	Wayland, Mass.
LOVEJOY, FREDERICK A.....	703 City Hall Annex, Boston 9, Mass.
MELLISH, MURRAY H....	Care of J. G. White Engrg. Corp., 43 Exchange Pl., New York, N. Y.
NEGUS, ARTHUR I.....	173 Cabot St., Holyoke, Mass.
NOLAN, CONRAD.....	P. O. Box 43, Jacksonville, Fla.
PHILLIPS, LAURENCE J.....	Room 1021, 100 Boylston St., Boston, Mass.
SHAW, EDWARD W.....	482 California St., Newtonville, Mass.
SKILLIN, FRED. B.....	37 Burnside Ave., W. Somerville 44, Mass.
STEARNS, GEORGE H.	145 Kent St., Brookline, Mass.
STENBERG, THORNTON R.....	Box 531, Atlanta, Ga.
SYLVIA, MANUEL H....	Rio de Janeiro & Sao Paulo Telephone Co., rue Libero Badaro N. 52, Sao Paulo, Brazil, So. America
WEBB, GEORGE F.....	244 Peoples St., Atlanta, Ga.
WHITNEY, HARRY L.....	38 Wallace St., W. Somerville 44, Mass.

RESIGNATIONS.

BARNEY, HAROLD B.	MURPHY, EDWARD T.
BARRUS, GEORGE H.	NASH, PHILIP C.
BURPEE, MOSES.	REYNOLDS, HENRY J.
FIELDING, WILLIAM J.	SANBORN, FRANK B.
GAUTHIER, ALMON I.	SAWYER, GEORGE S.
HOLMES, ALBERT J.	SUMNER, MERTON R.
HUBBARD, CARL P.	TINKHAM, CHARLES S.
LINCOLN, JAMES G.	WOOD, FREDERICK J.

EMPLOYMENT BUREAU.

THE Board of Government has established an employment bureau for the Society, to be a medium for securing positions for its members and applicants for membership, and also for furnishing employees to members and others desiring men capable of filling responsible positions.

At the Society rooms two lists are kept on file, one of *positions available* and the other of *men available*, giving in each case detailed information in relation thereto.

MEN AVAILABLE.

No. 535. Age 28. Graduate Washington Academy (Maine) and Pratt Institute, Brooklyn, N. Y. Four years' experience in electrical laboratories with reference to fire hazards, two years as inspector of wire and cables. Desires position as inspector of wire and cable, or construction work for which education and training has fitted.

No. 537. Age 31. Graduate of Tufts College, in civil engineering, in 1912. Four years' experience as instrumentman, two years and a half inspecting, drafting and designing steel and concrete bridges and buildings. Desires evening work, drafting, estimating or checking.

No. 538. Age 30. Graduate of Dartmouth, 1913, with degree of B.S., and from Mass. Institution of Technology, 1915, in sanitary engineering. Experience as engineer's assistant and timekeeper, one year; one year as sanitary inspector; one year as chief of party on surveys, graded streets, sewers; one year as assistant at Army Base on progress reports and computations; and two years as inspector and supervisor of construction. Salary desired, \$175 a month.

No. 539. Age 44. Graduate of Lawrence Scientific School and Harvard University. Member of American Society of Civil Engineers. Over twenty years' varied experience as engineer on structural work, industrial engineering, specification work and estimating. Interviews desired.

No. 540. Age 42. Technical High School education. Experience as chief estimator six and a half years; chief estimator and cost man for two years. Desires position as estimator. Salary desired, \$40 per week.

No. 541. Age 55. College education. Member American Society of Civil Engineers. Wide experience in construction work, railroad, mills, bridges, water works, sewers, dams, etc.

No. 542. Age 23. General engineering experience covering a period of six years, both in surveying and construction. Desires position as resident engineer, chief of party or transitman.

No. 543. Age 33. Graduate of Worcester Polytechnic Institute. Has had four years on electrical and heating work, and four years on electrical engineering and building equipment. Desires a position as executive or assistant engineer.

No. 544. Age 22. High-school education and two years at college. Has had experience as rodman and transitman. Desires position as rodman (\$20 per week) or transitman (\$25 per week).

No. 545. Age 25. Technical education. Has had two years' experience supervising construction and two years' designing reinforced concrete, steel and mill construction; architectural drafting, detailing and quantity estimating. Desires position as office or construction engineer. Salary desired, \$45 per week.

No. 546. Age 38. Technical education. Has had long experience, as draftsman, designer and assistant superintendent on special machinery, also as production engineer investigating production losses, etc. Desires position as chief draftsman or production engineer. Salary desired, \$2 500 and \$3 000 a year, respectively.

No. 547. Age 27. Graduate of Mass. Institute of Technology in civil engineering. Has had experience in planning and scheduling of jobs, in addition to instrument work; has also had experience in concrete form design. Desires position as engineer or assistant superintendent on reinforced concrete, or would accept office position as planner. Salary desired, \$2 500 a year.

LIBRARY NOTES.**RECENT ADDITIONS TO THE LIBRARY.****U. S. Government Reports.**

- Bulletin No. 931, U. S. Department of Agriculture.
- Cotton Production and Distribution. 1919-20.
- Results of Observations near Honolulu, Hawaii. 1917-18.
- Results of Observations at Sitka, Alaska, 1917-18.
- Water-Supply Papers, Nos. 415, 424, 434, 451, 454, 474, 456.

State Reports.

- Illinois. Inland Waterways and Transportation Costs. Mortimer G. Barnes.
- Massachusetts. Annual Report Public Service Commission. 1919.
- Massachusetts. Annual Report State Department of Health. 1919.
- Massachusetts. Investigations upon Purification of Sewage and Water at Lawrence Experiment Station. 1918 and 1919.
- New Hampshire. Biennial Report, State Highway Department. 1918-20.
- New York. Report Public Service Commission. Vol. I. 1917.
- New York. Report Public Service Commission. Vol. I. 1918.
- New York. Report Public Service Commission. Appendix to Vol. I. 1915.

County Reports.

- Essex County, Mass. Engineer's Report. 1920.

City and Town Reports.

- Boston, Mass. Annual Report, Public Works Department. 1919.
- Bridgeton, N. J. Report on Municipal Refuse Collection and Disposal. 1920.
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- Cambridge, Mass. Annual Report of Water Department. 1919-20.

Cambridge, Mass. Annual Reports of City Engineer. 1918 and 1919.

Dover, N. H. Annual Report of Board of Water Commissioners. 1920.

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Holyoke, Mass. Annual Report Board of Water Commissioners. 1920.

Providence, R. I. Annual Report Department of Public Works. 1920.

Reading, Mass. Annual Report of Water Commissioners. 1920.

Rutland, Vt. Annual City Report. 1920.

Miscellaneous.

Fire Tests of Building Columns. National Board of Fire Underwriters.

Maine Book, The. By State Librarian. Gift of H. S. Knowlton.

Mineral Productions of Canada. 1919 and 1920.

Proceedings of Institution of Civil Engineers. (Lond.) Vol. 207.

Public Health Work of Professor Sedgwick. Geo. C. Whipple.

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BOSTON SOCIETY OF CIVIL ENGINEERSFOUNDED 1848

PAPERS AND DISCUSSIONS

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ADDRESS AT THE ANNUAL MEETING.

BY FRANK A. BARBOUR, PRESIDENT, BOSTON SOCIETY OF CIVIL ENGINEERS.

(March 16, 1921.)

THE ENGINEER IN SERVICE OF THE PUBLIC.

THAT Herbert Hoover — an engineer — is the most outstanding personality in the world to-day should be of significant moment to all members of the profession. By his work as chairman of the Commission for Relief in Belgium, United States Food Administrator and Director-General of the American Relief Administration, he has, in the years since 1914, become an object of intense interest to millions of the people of this and many other countries, and, of all the great names connected with the recent world catastrophe, his is the one which most clearly stands for constructive public service, for re-habitation and for direct helpfulness to suffering humanity.

This is a record in which engineers may well find inspiration, but Mr. Hoover has more directly challenged the attention of the profession by the clear call to public service which, as president of the Federated American Engineering Societies, he has recently sounded.

And so it has appeared to me that a brief outline of the career of this man who has suddenly revealed to engineers the possibilities of joint professional effort in helping to find a way out of the present industrial morass may not prove unprofitable to this Society. If the address required of all expiring presidents

is assumed to carry some message of general value to the membership, I may, perhaps, be pardoned for seeking this message in the example and precepts of Herbert Hoover.

Born August 10, 1874, in the little village of West Branch, Ia., Herbert Clark Hoover graduated in 1895 from Stanford University — having in great part earned his way through school and college by work of various kinds. After a few months of regular pick-and-shovel mining he entered the office of Louis Janin, a leading mining engineer of the Pacific Coast, and two years later was recommended by his employer to an English company who were seeking a man to investigate and manage mining properties in West Australia. Seizing this opportunity, he justified Mr. Janin's regard, and, under most difficult conditions of climate, lack of water and an ore requiring technical originality for successful working, he put previous non-paying properties on a sound basis, discovered and developed a big new mine, and, at the age of twenty-four, had established a reputation in Australia and London.

At this point there came an invitation from China to become "director-general of mines" of that country, and, accepting, he traveled thither via London and America, stopping a few days in California to get married, and sailing for the Orient in February, 1899. The government connection was terminated a year later by the Boxer Uprising, and he then became consulting engineer and general manager of the Chinese Engineering and Mining Company, making a success of the great Tonshan coal properties, building railroads, cement works, a harbor, and superintending the operation of 20 000 employees and a fleet of ocean steamers.

Returning to London in 1902, Mr. Hoover was made a partner in the mining firm for which he had worked in West Australia, and in the following six years — with branch offices in New York and San Francisco — his engagements took him to all parts of the world, and he acquired a reputation for unusual ability in organization and administration.

In 1908 Mr. Hoover opened an office in London for the independent practice of his profession, and found his first large success in the upbuilding of the great Broken Hill Mines in South Australia. Rapidly his reputation for making broken-down

properties going concerns grew, and he soon became consulting engineer and managing director of a score of mining companies. Among his undertakings were the iron and copper mines at Kyshtin in the Urals, the zinc, iron, lead and coal mines on the Irtysh River in Siberia and the silver-lead mine in Burma, India, which has since become the greatest mine of its type in the world. Other operations under his direction were in Mexico, Colorado, Korea and South Africa, and in 1914 — when his professional activities suddenly ceased — about 175 000 men were engaged in the working of the various properties with which he was connected. He had, at the age of forty, reached the pinnacle of professional success.

And then came the war, and immediately Herbert Hoover found work in helping 70 000 stranded American travelers to get home, he and some friends first advancing several hundred thousand dollars against personal checks of unknown fellow-countrymen, and subsequently — at the request of Ambassador Page — taking charge of the distribution of the gold forwarded by the American Government for relief of the situation.

The capacity for organization and quick decision displayed in this preliminary skirmish in public service marked him for further work, and when, within a few weeks after the opening of the war, it became evident that, through some neutral agency, food must be furnished to the 10 million people imprisoned behind the German lines in Belgium and France, he was called to head the Commission for Relief in Belgium.

The situation was extremely difficult; the Germans were refusing to feed the people behind their lines, the Allies were blockading Belgium as well as Germany, and the imprisoned millions were in imminent danger of starvation. To convince both sides that strictly neutral relief was possible required diplomacy of the highest order, but consent was obtained and the work began. It is an epic in philanthropy — this feeding of 10 million people for fifty months — but the money was raised, the food purchased, transported to Rotterdam, transferred to canal boats and distributed to the non-combatant population behind the enemy lines in France and Belgium. Almost a billion dollars were expended by the Relief Commission in this

work, with an overhead of a little over one half of one per cent. Herbert Hoover had applied engineering efficiency to philanthropy.

And then, with the entrance of the United States into the war, there came to this engineer the call from the President that he take the thankless but all-important job of conserving the food supply of this country and so of the Allies. How successfully this was done is a matter of history. Starting in May, 1917, and without legal authority, until the passage of the Food Control Law in August, Mr. Hoover, by a wonderful appeal to the reason and hearts of the people through publicity, brought home to each individual the necessity of conservation. And then later, under a law, inadequate in many ways, he undertook the elimination of speculation and waste, the stabilization of prices in essential commodities so as to stimulate production, and, by coöperation with the war trade and shipping boards, the control of food exports — but always with as much of administration and as little of dictation as conditions would permit. Decentralization of authority and the carrying of responsibility to the individual were the keynotes of the work, and the results justified the method.

And then came the armistice, and once again the President called Mr. Hoover to great world service as Director-General of the American Relief Administration in Eastern Europe — a work which, while less known in this country, proved to be, perhaps, the greatest of all his public activities.

The Baltic States and the people of the Near East were in a condition of economic wreckage and starvation, Russia was in the hands of the Bolshevists, and, if the spread of anarchy were to be stopped, assistance in obtaining food and clothing and in re-starting the economic movements essential to life must be furnished to these newly liberated nations. Chosen Director-General of Relief by the Supreme Economic Council of the Allies, Mr. Hoover — with some 160 million dollars advanced by the United States and Great Britain — distributed to twenty different countries in six months, from December, 1918, to June, 1919, about $3\frac{1}{4}$ million tons of supplies, of a value of about 800 million dollars. With the whole transportation system

placed in his control and with food and clothing at his command, he became the general manager of Southeastern Europe, and while the Peace Conference talked he saved nations; and to this relief work done under his direction more than to any other factor it is due that anarchy and Bolshevistic domination did not spread over Europe, west of Russia.

Returning to America in the latter part of 1919, Mr. Hoover has continued his work for the re-habitation of Europe — acting as chairman of the American Relief Administration and recently leading to success the campaign for the raising of 33 million dollars for the European Children's Fund.

It has seemed to me that the record of this engineer in the service of humanity must be an inspiration to all members of the profession. We cannot all be Hoovers, but we can catch the spirit of service and the sense of individual responsibility to the public welfare.

But not only by example but also by precept is Herbert Hoover calling the engineer to a more active part in the service of the public. Elected president of the American Engineering Council — the administration body of the Federated American Engineering Societies — he at once projected on the screen a new and larger picture of the possibilities of joint action by engineers in helping to solve existing economic problems. He sees the engineer as a possible bridge between the employer and labor, and in the quantitative and constructive mind of the profession he finds the best chance of reaching a betterment of present industrial conditions.

Reviewing the whole economic situation and stressing the necessity of maximum production and the elimination of all avoidable wastes, he ends his first presidential address to the council in the following words:

"I am not one of those who anticipate the solution of these things in a day. Durable human progress has not been founded on long strides. But in your position as a party of the third part to many of these conflicting economic groups, with your lifelong training in quantitative thought, with your sole mental aspect of construction, you, the engineers, should be able to make contribution of those safe steps that make for real progress."

And three months later, on February 14, in another address we find him outlining a preliminary survey "of some of the weaknesses in our production system" in an attempt "to visualize the nation as a single industrial organism and to examine its efficiency towards its only real objective, — the maximum production." This survey, which is already started and which will involve an investigation of "the whole question of deficiency in production or of industrial waste in a broad sense," is the first public work of the Federated American Engineering Societies.

It is a big job, but the leadership of Herbert Hoover foretells success, and the doubter may well suppress his skepticism in the face of the past record of this man in translating creative vision into fruitful results, and, if it appears to any one that this excursion into the industrial field is a venture beyond the proper sphere of an association of engineering societies, let him ask himself by what class of men can the work be better done?

It will not do in this time of social unrest to simply trust that somehow the world will muddle back to stable conditions. "Wanting nothing from the public, either individually or as a group," engineers "are indeed in a position of disinterested public service." It is for us to catch some of the Hoover spirit of self-sacrifice, — *the will to serve*; and the awakening to a new sense of our opportunities and responsibilities will lift the profession to a place in the life of the nation hitherto unrealized.

BOSTON SOCIETY OF CIVIL ENGINEERS
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PAPERS AND DISCUSSIONS

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THE RESPONSIBILITY OF ORGANIZED LABOR FOR THE STAGNATION IN THE BUILDING INDUSTRY.

By CHARLES R. GOW,* MEMBER BOSTON SOCIETY OF CIVIL ENGINEERS.

(Presented March 24, 1921.)

THE remarks which I shall make to you upon this subject are not directed against the fundamental principles of labor unionism, but rather are intended to be in the nature of a somewhat frank criticism of certain unsound practices on the part of many unions which have resulted in very serious economic consequences to the building industry of this city.

I am aware that one may not in these days raise his voice in protest against any act or motive of union labor without being promptly classified by the labor group as an avowed opponent of the entire labor movement.

Intolerance on the part of labor spokesmen toward the opinion of others and their heated and often bitter resentment of all criticism have rendered it extremely difficult for true friends of labor to counsel moderation or to urge measures for labor's ultimate welfare.

It is my judgment that there may be several advantages both to the employer and to the public in dealing with labor unions which are intelligent and responsible in their conduct and practices. When, however, the obvious disadvantages of such dealings outweigh the benefits to be derived therefrom, there is no compunction, either legal or moral, which requires

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the community at large to subordinate its interests to those of organized labor.

If an act is wrong at all, it is just as wrong when committed by a labor union as it would be if done by a highwayman or any other evil person.

During the war, as most of you are aware, I served as an army officer in charge of constructing the Army Supply Base at South Boston. This project entailed an expenditure of, approximately, \$24,000,000 and the employment of a maximum of 7,500 workmen. Under the terms of the so-called Baker-Gompers agreement, this work was carried on as a closed shop job and in conformity with the working rules and agreements of the several trades unions employed in its construction. As a consequence, I received a very liberal education in the aims and policies of the unions as applied to the building industry. This experience, somewhat amplified by later contact and study along similar lines, has rather alarmed me as to the future welfare of the building industry in this locality, provided some of the present tendencies are not checked, and I shall try to present to you, as briefly as possible, an outline of the situation as it appeals to me.

It is customary to consider the cost of a building as being made up of the cost of the materials delivered at the site and the cost of labor used in assembling these materials in the completed building. Strictly speaking, however, there is no such thing as materials, unless we refer to the raw products in their natural state in the ground or in the forest. That which we speak of as material is merely the result of the combined labor which has gone into the production, manufacture and transportation of these raw products. True, a portion of the labor is contributed by the owners of the mine, of the mill or factory, of the railroad or by the distributor, and it may also sometimes be true that the wages paid to these owners in the form of so-called profits are in excess of a reasonable return for the amount and character of service rendered.

However, numerous laws have been established which prohibit employers such as those referred to from combining

into unions for the purpose of fixing their wage or profit, or of agreeing upon conditions under which they will render service. These laws, like all other laws, are sometimes evaded; but in the last analysis, by and large, the wages of this employing class are absolutely regulated by the immutable natural laws of supply and demand.

With respect to direct labor, however, the laws are much more generous. The right of paid employees to form unions for the purpose of fixing profits in the form of wages and of regulating conditions of employment is legally established and recognized.

This distinction between the two groups is of passing importance. We prohibit combinations by employers because we fear that such action might prove inimical to the public welfare through the increase and standardization of profits and the consequent advance in cost of the commodities which they handle. On the other hand, we permit and even encourage the wage-earning class to do the self same thing and in many respects they have taken full advantage of their opportunities. The economic effect upon the general public is the same in either case, whether costs be increased by combinations of employers or of employees.

There would seem to be no good reason why both groups should not be permitted to organize for their mutual protection and interest, but there is no moral right, and there should be no legal right, which would permit either group to combine for purposes which are detrimental to the interests of the community at large.

Statisticians have estimated that, on the average, at least 75 per cent of the cost of materials delivered on the site is on account of direct labor. Assuming this to be true, then at least 80 per cent of the cost of the completed building is represented by the direct labor item. Any general influence which increases labor costs must necessarily be reflected in a corresponding increase of the proportion in the cost of the completed building. On the other hand, if any substantial reduction is to be made in the cost of building construction, it must come chiefly through a readjustment of the 80 per cent item.

There has been a tremendous increase in labor cost during the past six or seven years. This increase has resulted from two principal causes, namely, increased rates of pay and decreased efficiency on the part of the individual worker. Such pay increases as have occurred have probably been justified in a large measure by the depreciated value of the dollar. Just why the same logic does not apply in the reverse order of things is one of the puzzling problems of the present situation which as yet remains unanswered.

The decrease of efficiency which has been especially marked during the past two or three years is likewise the result of two separate causes. First, the excessive demand for labor during the period of its maximum shortage produced a certain feeling of independence among the workers which was bound to result in more or less disregard for the wishes and welfare of the employer. It might also be said in passing that this attitude was not characteristic of any one class of employees but was noticeable generally wherever help was employed.

However, the inefficiency which resulted from this cause very largely disappeared some months ago with the advent of the present industrial depression and as unemployment became more general. It is safe to assume that no further trouble may be expected from this particular cause until the law of supply and demand again enthrones labor on its former pinnacle of prominent industrial importance.

The second and more serious cause of inefficiency is artificial, union made, and is in defiance of all economic laws and public welfare as well. It is with regard to this feature that I wish to devote my principal attention.

Until within a comparatively few years the building industry of this vicinity was represented by both closed and open shop contractors, so that there existed a certain degree of competition which prevented excesses by either group.

The superior organizing ability of the union leaders, backed by a strong public sentiment in their favor, led to the gradual elimination of the open shop contractor with the result that organized labor through the closed shop now holds practically a monopoly over the entire industry.

As a result of this situation, a non-member of a union cannot today find employment in a building trade in Boston except to a very limited extent. Consequently, practically all such men as a matter of necessity have joined the union pertaining to their trade because the closed shop jobs constitute their only sources of employment.

A non-union or open shop contractor from another city cannot do work in Boston because he is unable to secure his supply of labor here, such labor having been absorbed by the unions as already stated.

Individual contractors who might be inclined to change from closed to open shop conditions may not do so because, unless they could offer their men permanent employment (and this is not practicable), it would be unwise for their employees to leave the union and thereby restrict their opportunity for obtaining work to but one employer.

Also, general contractors are dependent upon sub-contractors, such as the plumber, electrician, steam-fitter, etc., for work pertaining to those trades and union sub-contractors would not be permitted to do work on an open shop job.

As a consequence of the monopoly thus established by organized labor in the building industry in this locality, there have been developed many practices of an arbitrary and autocratic nature which have seriously affected the interests of employers and public alike, and which if continued will tend to destroy the industry itself.

It has long been held by leaders of organized labor that whatever makes for the employment of a greater number of men is of direct benefit to the union, regardless of the method employed to secure the result, because it reduces the available supply of men and thereby produces a shortage for subsequent jobs, which in turn enables the union to dictate to a greater extent the terms under which their men will work.

One of the most common means adopted by the unions to force the employment of more men is the restriction of output by agreement. Thus, it was testified to by a number of

reputable builders at the recent Chamber of Commerce hearings that although brick masons formerly laid from 1,500 to 2,000 bricks per day it has now become the custom in that trade to limit each man to not more than 500 bricks per day. This greatly reduced output per man has so affected the available supply of brick masons, that during the past year contractors have been obliged to bid as high as \$1.25 to \$1.35 per hour to obtain their services at all, even though the established union rate was but \$1.00 per hour.

At a rate of \$1.35 per hour and a daily output of only 500 bricks laid, it will be readily apparent that it cost \$21.60 per thousand bricks laid for the mason's time alone, exclusive of helpers or material. It is interesting to note that this price is substantially the same as the cost of brick at the kiln. In other words, the union brick mason receives as much money for the simple act of picking up a brick and placing it in the wall as does the manufacturer of the brick for the entire expense of excavating the clay, moulding and burning, handling and storing, including all overhead expense, interest and depreciation charges, bad debts, business risks, etc. Still, labor leaders have been loud in their condemnation of the brick manufacturer as an alleged profiteer.

As a net result of this campaign by the union for a reduction in output, the cost of the mason's time in laying brick has increased from about \$2.00 per thousand to over \$20.00, although the individual mason received but slightly more than double his former wages per hour.

A recent demand of the wood lathers specifies that twelve bundles of laths shall constitute a day's work. For the past few years sixteen bundles has been the average output and formerly thirty bundles per day was not an unusual output.

It was formerly the custom among many contractors to sublet various portions of the work to the workmen direct. Thus, the laying of brick, the applying of lathing, plaster, paint, etc., was frequently done upon a piecework basis. The men who undertook this work competed for it on a price basis and naturally exerted themselves to the utmost to produce the maximum of output and therefore of remuneration.

This practice has long since been prohibited by the several unions under penalty of a heavy fine for violation, the theory being that the increased production which resulted under this system deprived other union men of an opportunity for employment.

Another method which has been found by the unions to be efficacious in creating additional jobs for their members, has been the simple expedient of insisting that high priced skilled mechanics must be employed to do certain work which otherwise would naturally be done by unskilled labor and in some cases even might require no labor whatever.

Having secured complete mastery over the employers through this strategic position it has been a simple matter for the unions to dictate the entire labor conduct of the industry. Each union today has its so-called working rules which form an integral part of the written agreements which employers are obliged to accept if they expect to obtain the services of members of that union. These rules prescribe in more or less detail the requirements which must be observed by the employer and limit to a considerable extent the amount of service which a member may render.

While each union has its own particular rules, many of the provisions are more or less common to the great majority. Thus, substantially all such rules require that foremen shall be members of the unions in question. The effect of this provision is to subject the foreman to two conflicting influences. If he is loyal to his employer, he may be deemed offensive to his union; and if he satisfies the union, it very often is because he has been disloyal to his employer.

Formerly, a foreman was the recognized mouthpiece of the employer and assumed all the responsibilities and functions of the latter during his absence. He was charged with the duty of obtaining a satisfactory degree of service from all of the employees under his direction. The employer looked to the foreman alone for results and the foreman in turn exercised full authority over his men.

The relationship has been greatly altered in recent years by this requirement that foremen must themselves be mem-

bers of the unions pertaining to their craft and have, therefore, to be acceptable to the other members of the unions who are to work under them. In case a foreman for any reason becomes obnoxious to the men, a complaint is filed against him with the union officials and he is tried, not by a group of fellow foremen, but by members selected from the rank and file who have authority to recommend his suspension or expulsion from the union.

During the construction of the Army Base work a foreman's union card was taken from him and he was debarred by the union from further connection with the work. Upon inquiring of the union officials I was informed that the charge heard against him was that he used profanity to the men. It appeared that his case had been considered by a secret tribunal which had recommended his expulsion and the findings were approved by the union membership. The records showed that he was one of the most efficient foremen on the work in the matter of low production cost and satisfactory workmanship. It seemed clear to me at the time that he had been thus disciplined because of too much insistence upon results from his men.

The trade rules of the Carpenters' District Council provide as follows:

"While all foremen should prove their efficiency as such, they shall not rush, use abusive language or otherwise abuse workmen under their direction. A violation of this rule is punishable by a fine, expulsion from the job, or both."

A prominent Boston contracting concern wrote to one of its foremen requesting a report as to why his work was costing so much and proceeding so slowly. The foreman's reply in part, in his own words, was as follows:

In regards to a foreman in any trade belonging to a Trade Union, it has a tendency to take away his authority, and he has not the control over the men that he would have, if he did not have to be one of them.

He should be allowed to pick out and discharge his poorest men at any time, even when he is taking on more men, and should not always be afraid of getting in wrong with his

"Local," and having a fine put on him, which under the present conditions, they can do. That is one of the reasons that workmen of today are not doing a day's work, simply because they do not have to, and under the present conditions it is impossible to speed up the work with a Union Foreman in charge.

On about all work, there has always been a feeling of dissatisfaction among some of the men, that they were not being used the same as the others.

As there is always some undesirable work to perform, and you would naturally pick out your poorest men to do such work, the consequences are, complaints are taken to the "Local" and then your foreman is called down again, then again, when your poorer men are put to work with the others in almost all cases your work slows down to your slowest men, and until you can control such men, to grading them with a sliding scale, this trouble will always exist.

The rules of the Plumbers' Union provide that

It shall be the duty of all foremen to report any man late on the job to his employer at the time it occurs.

This rule appears to be commendable in its nature until it is explained that the union insists that, inasmuch as this is the only express stipulation of its kind in the rules, it therefore follows that the foreman can report only this infraction and no other to his employer.

A foreman in the Painters' Union is prohibited from commenting as to whether a man is doing a proper or improper amount of work.

The Plumbers' Union rules provide that no man may be employed as a superintendent who for any reason is in bad standing with the union, although the superintendent is not necessarily required to be a union man.

The electricians and the lathers both submitted demands January 1, last, requiring that on jobs employing three or more men a foreman shall be employed or at least one of the men should receive a foreman's pay.

Another matter which has been taken from the employers' control by the unions is that of selecting and employing

apprentices in the several trades. Young men desiring to learn a trade in former years were accustomed to apprentice themselves to an employer who undertook to train them and eventually fit them to serve as finished journeymen. This system some years ago became offensive to the unions because it was believed that too many journeymen were being educated for the welfare of the union. Also apprentices were used for many of the simpler duties to the exclusion of union journeymen. Therefore the unions ultimately insisted that apprentices should be furnished only through the unions.

Since this time many rules have been established by the unions regulating the selection, employment and work of apprentices. The general tendency has been to restrict greatly the allowable number of such apprentices and to select them with regard to their union proclivities and affiliations.

A tendency of recent years on the part of the unions has been to prescribe rules governing payment for all expense of travel when men are sent out of town and, in addition, all board and expenses. The time of reporting for and leaving work is also covered by a great variety of rules.

There are several rules which prohibit work being done in the most economical manner.

Thus, it is provided by the Plumbers' and Steamfitters' Unions that all piping up to $2\frac{1}{2}$ inches in diameter must be cut *on the job by hand*. It would, of course, be very much cheaper to have all of the piping cut to exact measure in the shop, using power machines for the purpose, or even to cut it on the job using power, but this is absolutely prohibited by the rules of these unions.

The ornamental work in plastering was once cast in moulds at the shop and erected as units by the plasterers. Now the union requires that all of this work must be run in place by hand work.

Paint spraying machines have recently been invented which may be effectively used for painting flat surfaces. Government tests have demonstrated their efficiency and cheapness as compared with hand painting. The rules of the Painters' Union, however, prohibit their use.

The Painters' Union also prohibits the use of a brush more than 4½ inches wide in applying paint by hand.

The Plasterers' Tenders' Union specifies the particular size of hod it will use and also requires that no bag material shall weigh more than one hundred pounds.

The evident intention of the rules just referred to is to make work for more men regardless of economic considerations.

Another group of rules is aimed to compel the use of high-priced skilled mechanics to do unskilled work which any intelligent laborer might do.

For example, plumbers must handle all plumbing materials after they have been delivered on the first floor. An employer might prefer to lift the bath tubs for the upper stories by means of a derrick, but the rules provide that they must be handled by plumbers.

Automatic electric pumps are frequently installed for permanent drainage of subways and deep basements, and are found to require only occasional inspection for oiling. On a construction job, however, such a pump requires the constant attention of a union engineer at \$1.00 per hour.

Similarly, a small gasoline driven diaphragm pump of the type formerly operated by hand now requires a union engineer, although any intelligent water boy is competent to do the actual work required of him in addition to his other duties.

A steam operated derrick engine on a certain job properly required a hoisting engineer. An electrically driven concrete mixer on the same job did not necessarily require a skilled engineer, but employed one nevertheless. On the same job there were two other machines installed, a cable drum electrically operated for hauling charging cars and a small air compressor also electrically driven to furnish air for some jack hammers.

The union temporarily could not supply engineers for the two latter machines, but provided that the wages which would have been paid to an engineer on the compressor should be divided between the two members of the union

who were employed. Also it was directed that upon any day on which the cable drum was operated an additional two hours' pay should be allowed one of these men. No service was rendered by these men in connection with the operation of either machine but each man received twelve hours' pay for eight hours' work, and if the second machine was operated, one man was allowed fourteen hours' pay for his eight hours' work.

On one occasion the engineer employed to operate the concrete mixer wished to attend a meeting of his union on an evening when it was desired to run his machine. He arranged with the foreman of the concrete gang to look after his work in his absence. The mixer was operated until 9 P. M. and the following day this engineer claimed and subsequently received double time pay for the period during which the machine was operated while he was absent.

On another job two pile driver engines were employed, each operated by a union engineer. Two small electrically driven concrete mixers were in use at the same time and the only labor required to be done upon them was that of throwing in the switch to admit the electric current. This work was done by the concrete foreman. The union required that each engineer on the pile drivers be paid two hours extra each day, although neither engineer ever tended the apparatus in question.

The Carpenters' Union requires that all temporary work, such as erecting working stagings and the like, shall be done by union carpenters; also that the stripping of forms from concrete surfaces must be done by carpenters, although it has until very recently been done in a perfectly satisfactory manner by laborers.

All men employed on or around pile drivers and lighters which are engaged upon wharf building, except the engineers, must be union wharf builders, a branch of the Carpenters' Union. Many of these men do purely laboring work, but because of their rating draw skilled men's pay.

For several years after reinforced concrete work was introduced into this locality, the steel reinforcing bars used to

strengthen the concrete were handled and placed by common labor. Later it was provided in the rules of the Iron Workers' Union that all of this work should be done by members of that organization. A recent job in this locality was done by a non-union contractor using laborers to handle and place the reinforcing steel at a cost of \$7 per ton. A similar union job going on at the same time required union iron workers for this purpose at a cost of \$37 per ton.

Union iron workers must also be used to do any work in the nature of rigging, that is, the erecting, dismantling or operating of derricks (other than operating the engine); loading or unloading of machinery; erecting, moving or dismantling towers, chutes, etc. At the Army Base job there were used a large number of very light derricks hoisting small buckets out of the foundation excavations. The men actually used for signaling the engineer when to start and to stop were recruited from various walks in life, some being former street sweepers, some retired bar tenders, others having served as janitors, but all at that time rated under a union permit card as skilled union iron workers.

Stoves used at night for the drying out of plastering may not be looked after by the ordinary watchman but must be attended by a member of the Plasterers' Tenders' Union. Similarly, all dirt or debris made by a plasterer must be cleaned up by a union tender and not by unskilled labor.

Union plumbers must be used to lay even temporary piping used for construction purposes only, as well as the suction and discharge piping of pumps.

Union sprinkler fitters must be employed to lay underground cast iron pipes which conduct water to the sprinkler system; and union plumbers similarly must lay cast iron water pipes connecting with the building plumbing. Neither of these trades is as efficient as a trained laboring gang experienced in this class of work.

It must be apparent that the sole object of rules such as these is to provide work for the maximum number of members of the union in question, regardless of the economic effect upon the cost of the work.

There are numerous rules of a purely dictatorial character which serve to restrict the employer in the exercise of his natural functions.

As an illustration, the plumbers' rules provide that the employing plumber, or one of them if it is a firm, may do so-called 'jobbing' work in the shop provided he does not do more than 50 per cent of all the jobbing to be done.

The Plasterers' Union rules provide as follows:

"The employer shall be allowed the privilege of closing his weekly payroll on Thursday night in the Greater Boston district."

A revised constitution of the Lathers' International Union adopted at the annual convention at Toledo in September of last year provides that "All locals shall have power to regulate the granting of permits to contracting lathers, provided:

"First. That the fee charged contractor or solicitor, shall be left to the discretion of each local, but not to exceed \$100 and the resident limit cannot exceed one year."

The effect of this rule is actually to prohibit any contracting lather from doing business unless he first secures a permit from the union at not exceeding the sum of \$100, which permit must be renewed yearly.

The Lathers' Union also contains a provision that men working less than four hours shall be entitled to at least four hours' pay and if more than four hours is worked the men must be paid at least eight hours' pay.

The Painters' Union requires that men shall not go to the shop for tools or material during the noon hour but may only do so during the working time. Similarly, the Lathers' Union provides that men shall not be shifted from one job to another during the noon hour.

Both Lathers' and Plasterers' Unions insist that when employers have occasion to do work within the jurisdiction of another local, 50 per cent of the men must be hired from that local.

The Lathers' Union specifies the particular kind of nails and staples which the employer must furnish.

The Hoisting Engineers' Union directs that men who report for duty shall be paid two hours' pay for reporting if not put to work, unless they have been notified at the end of the previous shift not to report. Thus, if it happens to be stormy in the morning so that no work can be done, the engineers must still be paid \$2 for reporting. If an engineer is put to work at all on the day shift, he is entitled to at least four hours' pay and eight hours' pay if he starts to work on a night shift.

The engineer must be paid one hour's pay for getting up steam, which work he shall do unless the night watchman is also a licensed man, in which case the latter may get up steam for the engineer.

If any work is done on or with an engine during the absence of the regular engineer he must be paid just as if he had been present. In one case an engineer was requested by his employer to work on Saturday afternoon and Sunday in order to make some needed repairs on his engine so that the work would not be tied up on the following Monday. The engineer refused because of another engagement. Thereupon the employer hired some machinists from a nearby shop who made the desired repairs. The engineer subsequently made a claim for and received pay at double time rates for the period during which the machinists worked.

Some steel reinforcement was placed by union iron workers on a Saturday. On the following Sunday a gang of laborers was used to place concrete around the rods. The steel was found to be not in its correct position and so was taken out and replaced by the laborers. The iron workers subsequently demanded and received pay for the work as if they had been present.

A hoisting engineer can be used to operate only a particular machine. Even though his engine be temporarily idle he cannot be shifted to another, but a second man must be employed for this purpose. On one job some repairs were to be made upon a large grab bucket. Machinists were brought out on a Sunday to do the work. An occasional lift by means of a derrick was required for a few minutes at a time. An

engineer who was on duty looking after a pump was competent to do the necessary work, but he could not be used because the rules required that the regular engineer on the derrick was the only man who could touch the machine at any time. As a result, the regular man was used and paid at double time rate to make about six or eight lifts, while the other engineer was an interested spectator. Incidentally, it costs an engineer a \$5 fine if he is caught breaking this rule.

A hoisting engineer not only must confine himself to his own machine but he must not furnish steam to a second unit unless he receives two hours' extra pay per day for so doing. Furthermore, not more than one extra machine can be attached to his boiler.

No engineer is permitted to take the place of a discharged engineer without first securing the permission of the business agent of the union.

The hoisting engineers' rules provide:

In case of any misunderstanding between engineer and employer in regard to wages or conditions, engineers shall refer matter to Business Agent, whose decision shall be binding till next meeting of this union.

Practically all of the unions have adopted a rule that members must be paid off during working hours and are entitled to pay at overtime rates for all time while waiting for pay after hours.

The Cement Finishers' Union insists that the employer cannot hire his men direct but only through the union office. In this manner the men are kept under strict discipline, because they may be easily penalized by the business agent for any infraction of the rules or understandings by not being assigned to a job for a week or two. It is also possible to punish a contractor when deemed desirable by sending him the poorest men or by limiting the number of men he may use.

A contractor cannot choose which engineer he desires to keep when one or more machines are shut down. He must release the man whose engine is dispensed with even though this be his best man.

Engineers are not allowed to operate the water valve on a concrete machine, although the valve is purposely placed within easy reach of the operator of the machine. As a result the engineer must step aside each time the mixer is charged in order to allow a laborer to take his place for a few seconds and turn the water valve.

The Electricians' Union rules require that members working in the harbor shall be paid from time of leaving to return and in no case for less than a full day.

The minimum period for which an electrician may be paid is one-half day.

The 1921 demand of the Engineers' Union provides respecting overtime, that "an engineer shall receive not less than two hours' pay for any fraction of an hour's work."

The Stone Cutters' Union, in order to penalize any work done outside of its jurisdiction, provides that its rate of pay shall be five cents an hour more than the normal rate for work done on stone which has been partially worked elsewhere.

A certain wood carver paid his men the union rate and in addition gave them a bonus for all work over a definite amount. The union agent upon discovering this fact ordered the practice stopped upon the grounds that it served as too much of a spur to the men.

All rules, such as the preceding, are the natural consequence of the absolute power vested in the unions by reason of their monopoly of control over the industry.

One of the annoying and expensive features of trades unionism in the building industry is that pertaining to jurisdictional disputes. There are some twenty-seven separate trades unions which have to do with building work. Frequent questions arise between them as to which one is entitled to do certain work.

For instance, carpenters and iron workers quarrel over the question of which has the right to set steel sash and door frames.

The iron workers and steam fitters both claim the right to install pipe railings.

Electricians and elevator constructors disagree over the placing of certain devices in connection with electric controls.

Iron workers and metal lathers both claim the work of placing steel reinforcing.

Cement finishers and bricklayers each insist upon pointing around steel sash.

Stone cutters and cement finishers each claim the rubbing down of concrete surfaces.

During the construction of the Army Base a number of pumps known as pulsometers were used in connection with the foundation work. They required frequent relocating and each time they were moved it necessitated the use of two steamfitters to disconnect and reconnect the steam pipes; two plumbers to remove and replace the suction and discharge pipes; then iron workers (riggers) to hoist and lower the apparatus in the holes and an engineer to turn the steam valve. The engineer and a good laborer could have done all of the work required in much less time and in an equally satisfactory manner.

A certain hospital in this city had occasion to move its X-Ray machine to a new building. A specialist, who for twenty years had done nothing but erect such machines, was engaged to do the work. It so happened that a number of union electricians were employed at the time on the new building and they immediately demanded that the specialist cease work upon the X-Ray machine and that the work be turned over to them to do.

The specialist was thereupon discharged and the union men were directed to proceed with the installation. None of the union men was experienced with such work and from time to time they called upon the operator, a female nurse, to explain to them how the machine was assembled. Repeatedly work which was found to be wrong had to be undone and changed. Finally, being utterly unable to make the machine work, the union men called upon the specialist to advise them and he refused, whereupon the union men gave up the job, the specialist was again called in and the installation finally completed.

The usual period required by the specialist for such an installation was from three to four days. Altogether, between two and three weeks were required in this case.

In addition to the excessive cost involved, all patients requiring X-Ray treatment had to be sent to another hospital during this period.

Regardless of its merits or objections, the eight-hour work-day has, by more or less common consent, come to be recognized as definitely established. Such a limitation has seemed especially desirable in the case of indoor employment involving, as is frequently the case, poor light, bad ventilation and extremely close application.

The work of the building trades laborer is conducted, usually, in the open air under exceptionally good hygienic conditions, and it might reasonably be presumed that the length of the working period was a matter of less importance in this instance than in the former case.

Furthermore, the work of the building mechanic is not continuous, as is that of the factory worker, but is frequently interrupted by bad weather conditions and by lapses in employment, so that employees in this industry have many opportunities for rest and recuperation which are not open to the indoor worker. Nevertheless, the eight-hour work-day has been generally adopted in the building industry as an accepted and desirable limit and is universally insisted upon by all trades unions.

There are some reasons for believing that the labor leaders have not always been consistent in their attitude toward the eight-hour day; but however this may be, it has frequently been apparent that the workmen themselves have preferred a longer work-day, especially if it involved bonus pay in the form of overtime allowances.

During the war, because of the demand for excessive production, overtime work was general and accounted in large measure for the great increase of income enjoyed by labor during that period. After the signing of the armistice, however, the eight-hour day was re-established with the result that labor became very much dissatisfied and strikes on government work were frequent in protest against what was considered to be a reduction in pay.

It is a requirement of all union rules in the building indus-

try that work in excess of eight hours per day shall be paid for at double the standard rate. The philosophy of the labor men on this point is that more than eight hours' continuous occupation is destructive of the physical and mental well-being of the men and that, in order to prevent unscrupulous employers from exacting an excessive day's work from their employees, a penalty must be imposed which will deter them from exceeding the eight-hour period.

The amount of penalty for overtime work would be a matter of small concern to the employer were it not for the fact that it is practically impossible to avoid overtime work entirely without involving uneconomic consequences. Oftentimes it is necessary to carry the work to a certain point before stopping for the night, and if this point is not reached at the end of the eight-hour period, the work must be completed under penalty rates. Sometimes a small amount of preparatory work is required to be done after hours to permit the balance of the work going forward promptly the following day. Repairs to machinery must frequently be made after hours to prevent the interruption to the work which would result if they were made within the eight-hour period. For all such work the employer must pay two hours' pay for each hour actually worked.

If it were true that the unions desired only to discourage unnecessary overtime work, the result could be accomplished quite as readily by a penalty of 50 per cent additional pay as by the 100 per cent now imposed. No employer is likely to add 50 per cent or even 10 per cent to his labor cost unless it is an absolute necessity. As a matter of fact, the 100 per cent tax is really looked upon by the labor men as affording an opportunity for increased compensation, and hence the rate is deemed by them to be of considerable importance.

During the construction of the Army Base, which work was carried on day and night, the labor delegates frequently complained that some men were unduly favored by the superintendent through receiving a disproportionate share of overtime work.

A rule of the Electricians' Union reads as follows: "When

a contractor finds it necessary to work men overtime, men working on the job must have the preference."

It is the custom in cement finishing work for the men to spread and level off the mortar surfacing during the forenoon and to wait for it to set sufficiently before giving it the final trowelling later in the day. The mortar last spread is usually not ready for trowelling until late in the afternoon, so that overtime in a considerable amount is usually necessary to complete the day's work.

To meet this situation, there have been introduced certain ingredients known as accelerators, which hasten the setting of the cement and permit the final trowelling to proceed almost immediately. The local cement finishers' union has refused to use these accelerators because such use deprives its members of their overtime.

Some unions require that their men shall receive double pay for all work at night, even though they be employed on a regular night shift.

An electrician was required to watch a certain piece of electric apparatus which ran continuously on a certain construction job. He was in attendance from 5 P.M. to 5 A.M. seven nights a week and received, under the union rules, one hundred and sixty-eight hours' pay per week. His duties consisted in seeing that the apparatus was oiled occasionally and he sometimes was required to throw a switch.

During the labor shortage of the past two years, employers discovered that a plentiful supply could usually be obtained by increasing the daily working hours beyond that customary in the locality with the resultant increase of bonus on the excess over eight hours.

If labor leaders are sincere in their expressed desire to keep all jobs within the eight-hour limit, this could best be accomplished by reducing the overtime allowance to an amount which would look less attractive to their workmen and at the same time would operate to penalize the employer sufficiently to prevent its too frequent adoption.

The five-day week has now been adopted by five of the trades connected with the building industry. As a matter of

fact, the five-day week means the elimination of all work on Saturday, for even though the first five days of the week, or any of them, be stormy so as to prevent any work being done, the men are still prohibited from working on Saturday except under a special permit and then only at double time rates.

As long as the balance of the building trades work on Saturday forenoon, it is more or less necessary to utilize some of the men from the five-day trades in order to prevent interruption to the work. All such men must have the permission of their business agent and in addition must receive double time for the period worked on Saturday. Naturally, this situation creates a preferred class of workmen so far as Saturday work is concerned, and, in addition to the added cost to the employer, produces an atmosphere of dissatisfaction among the men of other trades who receive only single time for Saturday forenoon.

The cumulative result of the almost innumerable requirements of the unions as applied to the building industry in Boston today is an increased cost in construction of probably at least 25 per cent. In other words, the man who builds an \$8,000 house pays \$2,000 merely to satisfy the whims of the trades unions, and the sad feature of the matter is that no one benefits from this expenditure.

On the face of things, the unions assume that they are profiting through the payment of additional wages and the employment of a greater number of their members. As an actual fact, however, this increased cost of construction drives prospective builders out of the market, with the result that the total volume of work is greatly decreased and the average yearly income of the workman is reduced.

The advocates of the present union labor policy are apparently not intelligent enough to realize that for every owner who can afford to pay \$20 per thousand for laying bricks, there are five or six other owners who could afford to pay \$10 and who cannot build at all at the current rate. For each owner who can afford to pay \$20,000 for a dwelling house, there are probably ten who would be willing to spend

\$10,000 for the same purpose. An hourly rate of \$1.50 as recently demanded by the unions would make it impossible for anyone to build except for the most urgent reasons, and it is altogether probable that the yearly income of the men would actually be less at this rate than would be received by them under a rate of fifty cents per hour.

The fact is that owners absolutely cannot build today, because at present costs the possible incomes to be obtained from the completed building will not pay the investment and upkeep charges. There are only two possible remedies for this situation: to increase rents materially or to reduce building costs by a substantial amount.

There are projects running in value into millions of dollars which could and would be under way in this locality now if building costs were reduced sufficiently to meet their income possibilities. Contrary to the prevailing notions of the labor unions, these buildings will not be built at present or further increased costs, and the result must be that millions of dollars which otherwise might be distributed in labor pay-rolls will not go into labor's pocket.

Building materials have made substantial recessions. Lumber, steel, cement, and many other commodities have suffered very material reductions in prices. It remains for labor to awake to its responsibilities and to eliminate every unnecessary and uneconomic practice which adds to cost.

But the labor advocate tells us that the real cause of high costs is the excessive profit charged by the contractor for his service. The answer to this argument is very simple. By the provisions of law the contractor operates in open competition with all comers. Anyone, labor men included, may enter the business at any time and secure these excessive profits for themselves if they exist. Nor is it absolutely essential that they possess any great amount of capital. I have known of many contractors who began business with practically no money, but whose credit was good because of their reputation for honesty, ability in their line, and their general knowledge of their trade. No union card is required nor is anyone's permission necessary for any person to be-

come a contractor. Most contractors would welcome a condition under which labor would put its services upon the same basis and allow each member to derive his income in unrestricted competition with his fellows, as must the contractor.

Government statistics tell us that 75 per cent of the men who enter business in the country fail, and the building business is rated as one of the most hazardous of business callings.

Undoubtedly a majority of employers would appreciate the opportunity to combine and agree upon their prices as do the members of labor unions. This, as already stated, is forbidden them and organized labor has always been loudest in condemnation of any such suggestion. It would seem, therefore, that no valid criticism can be directed against the occasional employer who succeeds in spite of these handicaps.

It might quite naturally be assumed that the increased pay, shorter hours and lessened unit production which union conditions have brought about, would be greatly appreciated by the workmen so benefited. It has been my observation, however, that this is not the case. Leaders of organized labor have diligently and continuously attempted to educate their members to the belief that they are being denied their rightful share of the profits of industry; that they are discriminated against in the application of the laws and that society in general is ungrateful and unresponsive for the superior benefits conferred upon it by labor.

As a result of this effective schooling, labor is more unhappy and more dissatisfied with its lot today than at any previous time in its history. Personal initiative and individual pride of accomplishment have been almost completely destroyed by placing all men upon an equal basis of pay and of output. In addition, there has gradually come the disagreeable realization that with increased compensation and reduced output there must necessarily also ensue higher costs for commodities and a commensurate advance in the cost of living, thereby leaving the workman no better off and frequently in a worse state than before. It cannot fairly

be said that such a result from the activities of any organization is indicative of a beneficent institution.

Organized labor has always insisted that its interests are naturally antagonistic to those of the employer and this impression has very largely prevailed in the minds of the general public. Just why this assumption has been so readily adopted it is difficult for me to understand. Unless the employer is prosperous, it must be evident that his employees cannot prosper. That which makes for an increased volume of work benefits both classes, and that which restricts the amount of work which can be undertaken similarly does injury to both. It would seem to follow that the true interests of both groups lie along parallel lines.

If membership in a trades union could be made a guarantee to the employer and public alike of superior skill, efficiency, fidelity and co-operation on the part of each of its members, no intelligent employer could afford to deal with any other body of workmen even though the rates of pay were correspondingly greater for union employees.

When an employer resists demands of the union which tend to lower efficiency and to increase costs, he is working for the union's interest quite as much as for his own, for such practices inevitably reduce the volume of work and thus penalize both.

It has recently become popular on the part of labor unions to demand what is referred to as a living wage. As I understand the term, it is intended to represent the amount of income which will allow the recipient at current prices to enjoy the standard of living which he has established as desirable for his comfort. At the present time this so-called living wage is variously estimated at from \$2,000 to \$3,000 per year.

Apparently in the establishment of these figures no consideration has been given to the gross amount of wealth which is available for distribution as income. Obviously, if nothing was produced in the world, there could be no income for anybody. The greater the total production, the greater the average income becomes. Let us see what the actual figures are.

The report of the Internal Revenue Collector's Department for the year 1918 indicates that there were 1,832,000 persons in this country whose incomes for that year were in excess of \$2,000, and the total income received by this class was \$11,191,000,000. Assuming five members to the average family, there would be approximately 22,000,000 families to be supported. If all of the excess incomes over \$2,000 were to be confiscated and divided among the remaining families, each family would receive about \$374. Furthermore, the returns indicate that there were some 18,000,000 families receiving less than \$1,000. This leaves 2,168,000 families with incomes between \$1,000 and \$2,000. Assume that the 18,000,000 families all received as much as \$1,000 and that the 2,168,000 families averaged to receive \$1,500, we would then have a total income for the entire country of \$32,443,000,000. Divide this figure by 22,000,000 and we find the average income to be approximately \$1,500 per family per year. These figures indicate conclusively that present production would have to be doubled to permit an average income of \$3,000 per family in this country.

The labor leader or sympathizer who demands an increased wage combined with a decreased production is advocating an economic paradox.

During the past four or five years we have experienced in this country an era apparently of exceptional prosperity. So great has the demand for all classes of labor and commodities been that wages and business profits generally advanced to unprecedented high level. The money which we paid for this labor and for the commodities was in part the accumulated surplus wealth of the countries of the world but was principally derived from the hundreds of billions of borrowed wealth which still requires to be repaid. By far the greater proportion of this money was not paid out for commodities or labor which permanently enriched the world's resources, but rather was contributed to the waste of war or for extravagancies and luxuries which were of only passing value. As a result, the world's wealth has been greatly decreased and an enormous debt accumulated. It is as if the individual

had squandered his personal savings and in addition had exhausted his borrowing credit, with no resulting assets with which to discharge his debts.

This great world debt has to be paid. It can be paid only by the individuals who people the earth. Each of us in the last analysis must pay our share. Those who possess money may contribute in the form of taxes. Those who have no money will contribute either in the form of additional labor or of a reduced standard of living. But no one can possibly escape his share. For any person or any group to argue that they are permanently entitled to the same (or a better) net income as they received before the war, is to argue that they should be relieved from payment of their share of this world debt.

Organized labor has shown no disposition to recognize these economic truths or to admit its responsibility for assisting in the rehabilitation of normal conditions.

Thinking people in all walks of life are awakening to a realization that the days of luxury and easy incomes which have prevailed for the last few years are now a thing of the past, and that unless world bankruptcy and economic chaos are to follow we must buckle down as never before to produce cheaply by eliminating all waste in industry and to avoid all unnecessary extravagancies in living until such time as our enormous debts have been discharged. By this means only can normal conditions again be established.

If organized labor refuses to co-operate with the balance of society in bringing these conditions about, then we must go along without it.

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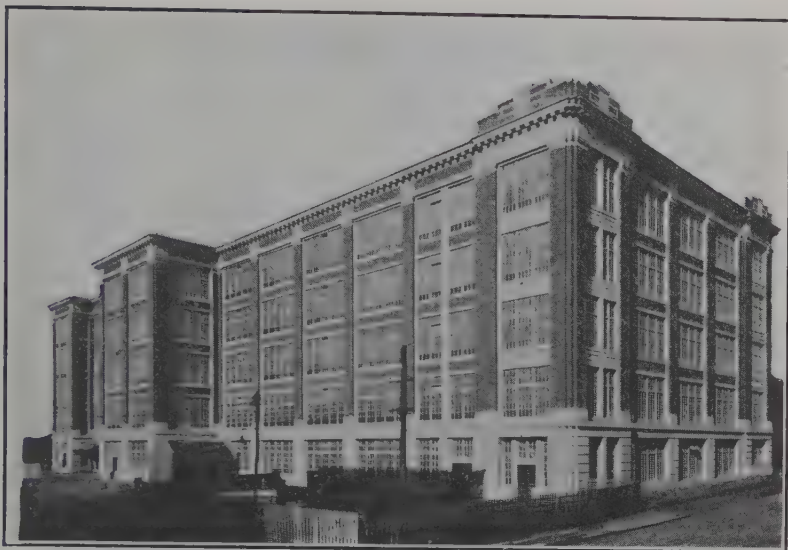
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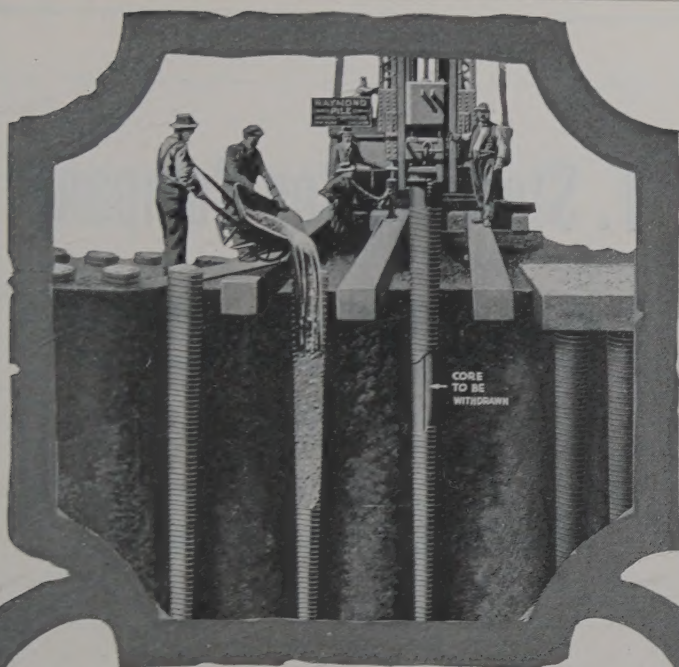
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